

General Disclaimer

One or more of the Following Statements may affect this Document

- This document has been reproduced from the best copy furnished by the organizational source. It is being released in the interest of making available as much information as possible.
- This document may contain data, which exceeds the sheet parameters. It was furnished in this condition by the organizational source and is the best copy available.
- This document may contain tone-on-tone or color graphs, charts and/or pictures, which have been reproduced in black and white.
- This document is paginated as submitted by the original source.
- Portions of this document are not fully legible due to the historical nature of some of the material. However, it is the best reproduction available from the original submission.

E82-10158

AUG 14 1981

SR-L1-04122
JSC-17402

AgRISTARS

"Mode available under NASA sponsorship
in the interest of early and wide dis-
tribution of Earth Resources Survey
Program information and without charge
for any use."

A Joint Program for
Agriculture and
Resources Inventory
Surveys Through
Aerospace
Remote Sensing

July 1981

Supporting Research

U.S. CROP CALENDARS IN SUPPORT OF THE EARLY WARNING PROJECT

T. Hodges

(E82-10158) AGRISTARS: SUPPORTING
RESEARCH. US CROP CALENDARS IN SUPPORT OF
THE EARLY WARNING PROJECT (Lockheed
Engineering and Management) 134 p
HC A07/MF A01

N82-21682

Unclass
00158

CSC 05B G3/43

Lockheed Engineering and Management Services Company, Inc.
Houston, Texas 77058



Lyndon B. Johnson Space Center
Houston, Texas 77058

1. Report No. SR-L1-04122, JSC-17402		2. Government Accession No.		3. Recipient's Catalog No.	
4. Title and Subtitle U.S. Crop Calendars in Support of the Early Warning Project				5. Report Date July 1981	
				6. Performing Organization Code	
7. Author(s) T. Hodges Lockheed Engineering and Management Services Company, Inc.				8. Performing Organization Report No. LEMSCO-14674	
				10. Work Unit No.	
9. Performing Organization Name and Address Lockheed Engineering and Management Services Company, Inc. 1830 NASA Road 1 Houston, Texas 77058				11. Contract or Grant No. NAS 9-15800	
				13. Type of Report and Period Covered Technical Report	
12. Sponsoring Agency Name and Address National Aeronautics and Space Administration Lyndon B. Johnson Space Center Houston, Texas 77058 Technical Monitor: R. B. MacDonald				14. Sponsoring Agency Code	
15. Supplementary Notes					
16. Abstract The appendices in this report provide the following data. Appendix A contains United States crop calendars produced for the Large Area Crop Inventory Experiment (LACIE). Appendix B contains crop calendar samples for Colorado, Iowa, Kansas, Minnesota, Montana, Nebraska, North Dakota, South Dakota, and Texas; these calendars are based on weekly Crop Reporting District (CRD) level observations of the percentage of various crops at several growth stages. Appendix C contains a sample of the statistical treatments of the weekly data. Appendix D contains 4 to 5 years of 50-percent dates for stages on a CRD level for Arkansas, Iowa, Kentucky, Louisiana, Michigan, Mississippi, Ohio and Wisconsin.					
17. Key Words (Suggested by Author(s)) LACIE Normal crop calendars			18. Distribution Statement		
19. Security Classif. (of this report) Unclassified		20. Security Classif. (of this page) Unclassified		21. No. of Pages 133	
				22. Price*	

*For sale by the National Technical Information Service, Springfield, Virginia 22161

PRECEDING PAGE BLANK NOT FILMED

SR-L1-04122
JSC-17402

U.S. CROP CALENDARS IN SUPPORT OF THE EARLY WARNING PROJECT

Job Order 71-302

This report describes Vegetation/Soils/Field Research activities
of the Supporting Research project of the AgRISTARS program.

PREPARED BY

T. Hodges

APPROVED BY



T. C. Minter, Manager
Development and Evaluation Department

LOCKHEED ENGINEERING AND MANAGEMENT SERVICES COMPANY, INC.

Under Contract NAS 9-15800

For

Earth Resources Research Division
Space and Life Sciences Directorate
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
LYNDON B. JOHNSON SPACE CENTER
HOUSTON, TEXAS

July 1981

LEMSCO-14674

PRECEDING PAGE BLANKS NOT FILLED

PREFACE

The Agriculture and Resources Inventory Surveys Through Aerospace Remote Sensing is an 8-year program of research, development, evaluation, and application of aerospace remote sensing for agricultural resources, which began in fiscal year 1980. This program is a cooperative effort of the National Aeronautics and Space Administration, the U.S. Agency for International Development, and the U.S. Departments of Agriculture, Commerce, and the Interior.

The work which is the subject of this document was performed within the Earth Resources Division, Space and Life Sciences Directorate, at the Lyndon B. Johnson Space Center, National Aeronautics and Space Administration. Under Contract NAS 9-15800, personnel of Lockheed Engineering and Management Services Company, Inc., performed the tasks which contributed to the completion of this research.

PRECEDING PAGE BLANK NOT FILMED

CONTENTS

Section	Page
SUMMARY.....	1
BIBLIOGRAPHY.....	3
 Appendix	
A. REPUBLISHED CROP CALENDARS FROM LACIE.....	A-1
B. SAMPLES OF CROP CALENDARS FOR COLORADO, IOWA, KANSAS, MINNESOTA, MONTANA, NEBRASKA, NORTH DAKOTA, SOUTH DAKOTA, AND TEXAS.....	B-1
C. SAMPLE OF STATISTICAL TREATMENT OF CROP CALENDAR DATA FOR STATES WITH WEEKLY DATA: IOWA, KANSAS, MINNESOTA, MONTANA, NEBRASKA, NORTH DAKOTA, SOUTH DAKOTA, AND TEXAS.....	C-1
D. FIFTY-PERCENT DATES FOR STAGES FOR ARKANSAS, IOWA, KENTUCKY, LOUISIANA, MICHIGAN, MISSISSIPPI, OHIO AND WISCONSIN.....	D-1

PRECEDING PAGE BLANK NOT FILMED

TABLES

Table	Page
1 CROP AND GROWTH STAGE IDENTIFICATION NUMBERS.....	5
2 STATE IDENTIFICATION NUMBERS.....	5

SUMMARY

The appendices in this report provide the following data. Appendix A contains United States crop calendars produced for the Large Area Crop Inventory Experiment (LACIE). Appendix B contains crop calendar samples for Colorado, Iowa, Kansas, Minnesota, Montana, Nebraska, North Dakota, South Dakota, and Texas; these calendars are based on weekly Crop Reporting District (CRD) level observations of the percentage of various crops at several growth stages. Appendix C contains a sample of the statistical treatments of the weekly data. Appendix D contains 4 to 5 years of 50-percent dates for stages on a CRD level for Arkansas, Iowa, Kentucky, Louisiana, Michigan, Mississippi, Ohio, and Wisconsin.

PRECEDING PAGE BLANK NOT FILMED

BIBLIOGRAPHY

Hodges, T.; Sestak, M. L.; and Trenchard, M. H.: Crop Calendars for the U.S., U.S.S.R., and Canada in Support of the Early Warning Project. LEMSCO-14675, NASA/JSC (Houston), May 1980.

Sestak, M. L.; Hodges, T; and Artley, J. A.: Variability of Crop Calendar Stage Dates. LEMSCO-14070, NASA/JSC (Houston), 1980.

PRECEDING PAGE BLANK NOT FILMED

TABLE 1.- CROP AND GROWTH STAGE IDENTIFICATION NUMBERS

Numbers	Crops	Stages								
		1.0	2.0	2.5	3.0	3.5	4.0	5.0	6.0	7.0
1	Corn	Planting	Floral initiation		Tasseling or silking		Dent	Maturity	Harvest	
2	Soybeans	Planting	Rapid nodal development	Bloom	Podding		Full seed	Maturity	Harvest	
3	Sorghum	Planting	Full fifth leaf		Half bloom		Dough	Maturity	Harvest	
4	Small grains	Planting	Emergence	Tillering	Jointing	Flag leaf	Heading	Dough	Maturity	Harvest
5	Spring wheat									
6	Winter wheat									
7	Oats									
8	Barley									
9	Rye									
10	Rice	First cutting	Second cutting							
11	Alfalfa	First cutting	Second cutting							
12	Other hay	Planting	First square				Setting bolls	Open bolls	Harvest	

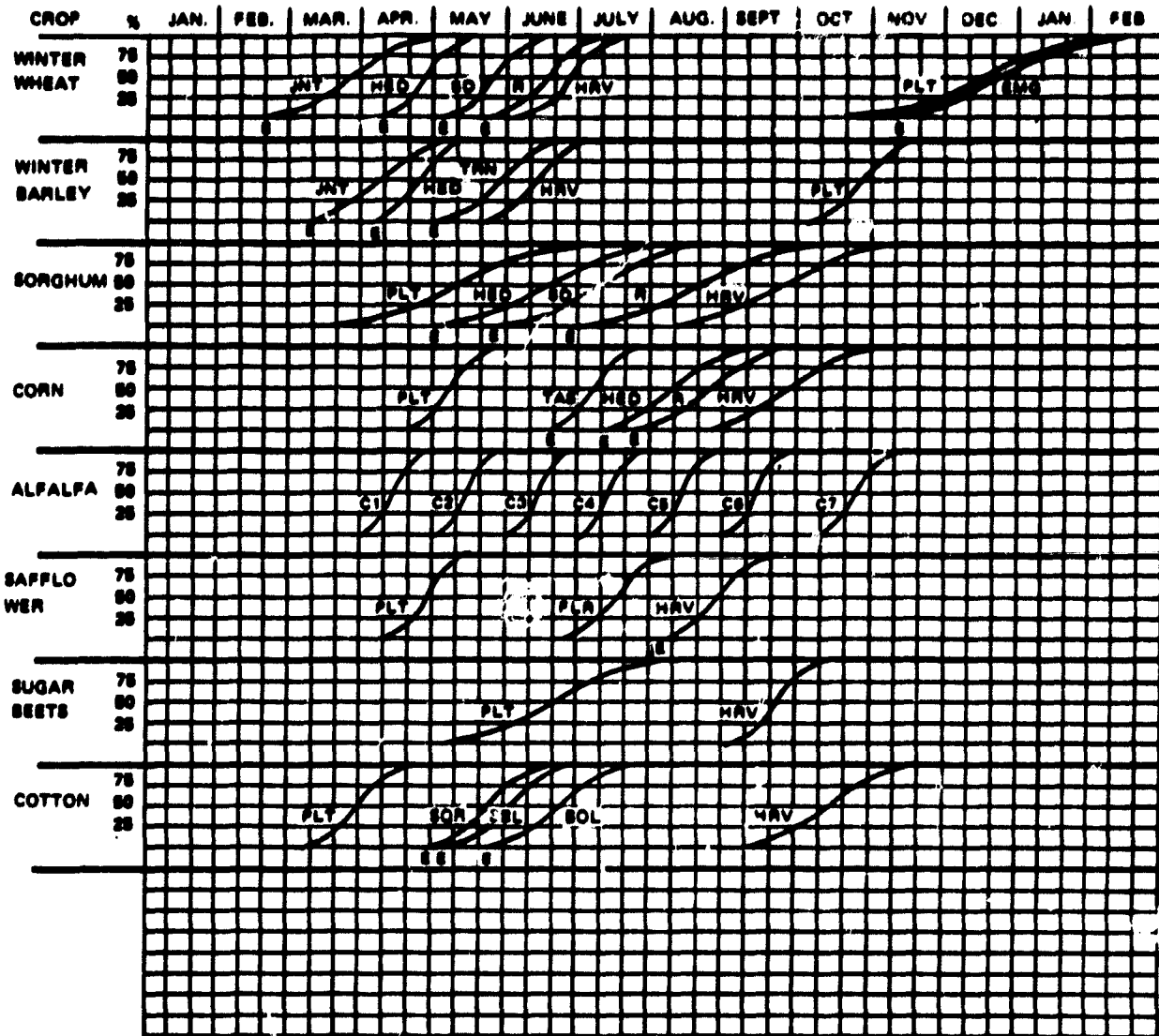
TABLE 2.- STATE IDENTIFICATION NUMBERS

Colorado (8)	Iowa (19)	Kansas (20)	Minnesota (27)	Montana (30)	Nebraska (31)	North Dakota (38)	South Dakota (46)	Texas (48)
-----------------	--------------	----------------	-------------------	-----------------	------------------	----------------------	----------------------	---------------

APPENDIX A
REPUBLISHED CROP CALENDARS
FROM LACIE

ORIGINAL PAGE IS
OF POOR QUALITY

CROP CALENDARS PLOTTED 01/08/78
PERCENT OF AREA IN DEVELOPMENT STAGE BY SPECIFIED DATE FOR
ARIZONA QRO 6 ESTIMATED AVERAGE CROP CALENDARS FROM USDA BULLETIN 263

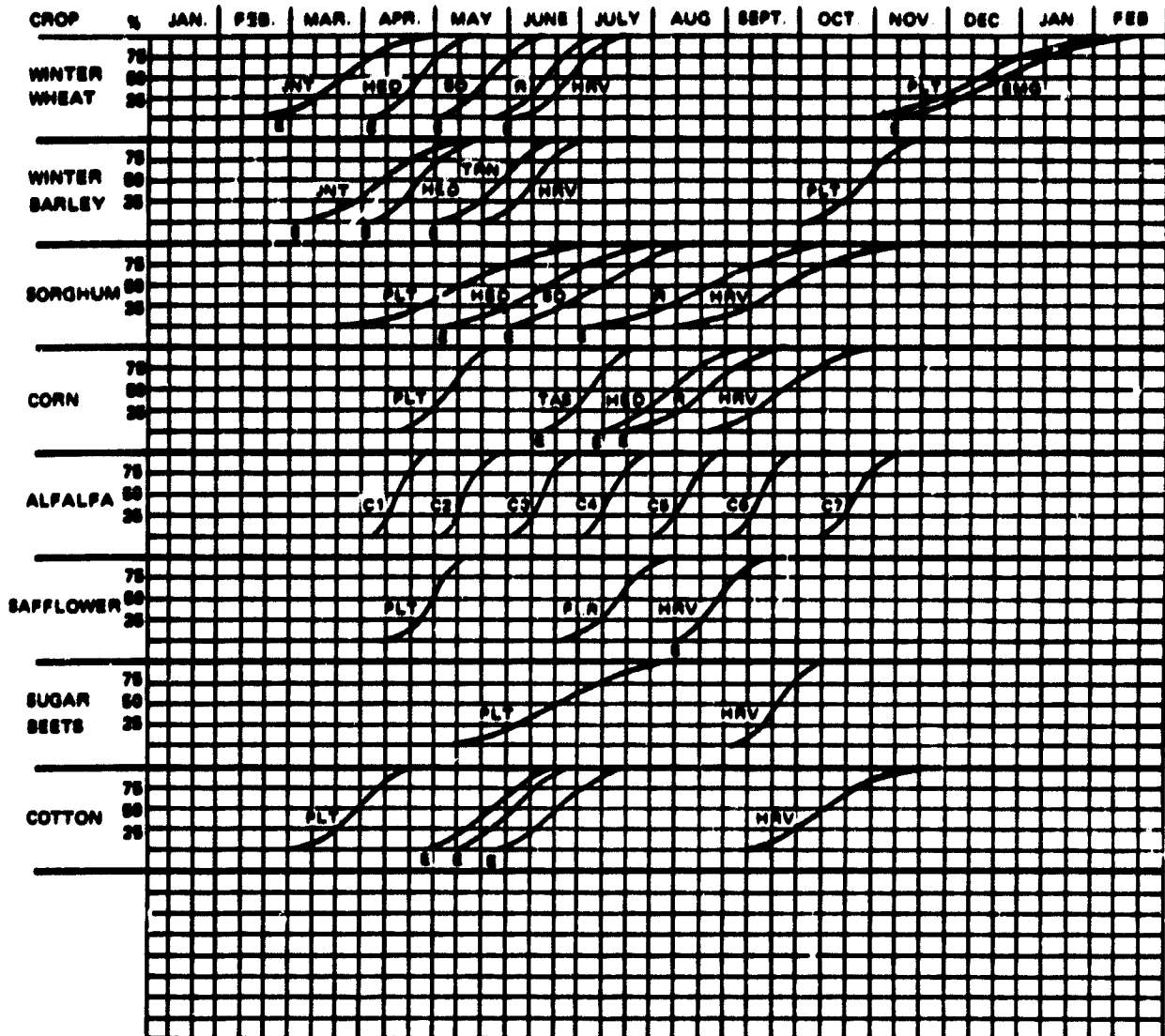


LEGEND

E	Under stage name, indicates rough estimate of date
EMG	Emergence
HED	Heading
HRV	Harvest
JNT	Jointing
PLT	Planting
R	Ripe
SD	Soft dough
TRN	Turning
C	Cut
FLA	Flowering
SQR	Squaring
SBL	Soft ball
SOL	Bolling

ORIGINAL PAGE IS
OF POOR QUALITY

CROP CALENDARS PLOTTED 01/09/76
PERCENT OF AREA IN DEVELOPMENT STAGE BY SPECIFIED DATE FOR
ARIZONA CRD 7 ESTIMATED AVERAGE CROP CALENDARS FROM USDA BULLETIN 283

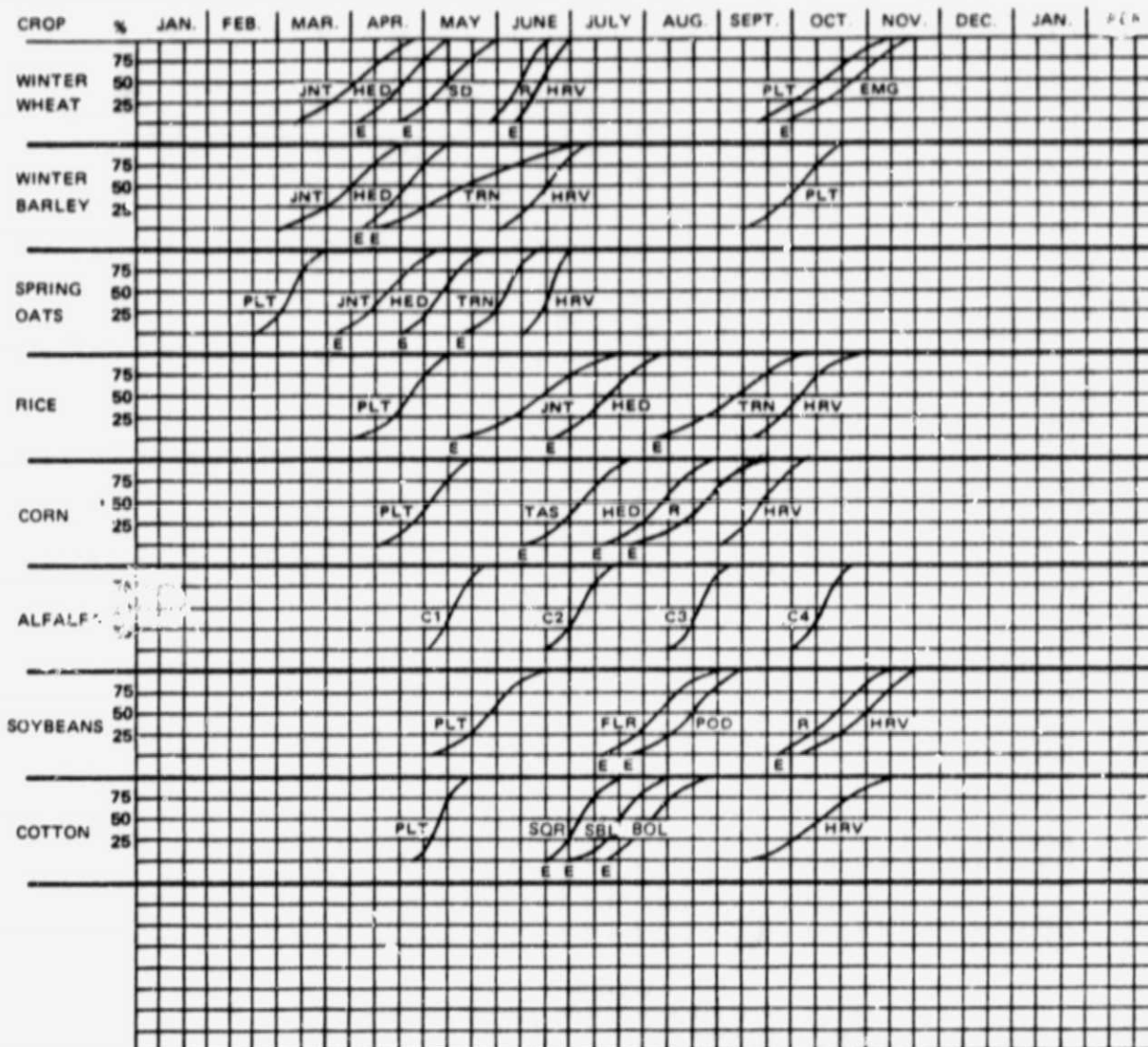


LEGEND

E	Under stage name, indicates rough estimate of date
EMG	Emergence
HED	Heading
HARV	Harvest
J.T	Jointing
PLT	Planting
R	Ripe
SD	Soft dough
TRN	Turning
C	Cut
SOL	Solling
TAS	Tasseling
SQR	Squaring
SBL	Soft ball

ORIGINAL PAGE IS
OF POOR QUALITY

CROP CALENDARS PLOTTED 01/06/76
PERCENT OF AREA IN DEVELOPMENT STAGE BY SPECIFIED DATE FOR
ARKANSAS CRD 6 ESTIMATED AVERAGE CROP CALENDARS FROM USDA BULLETIN 283

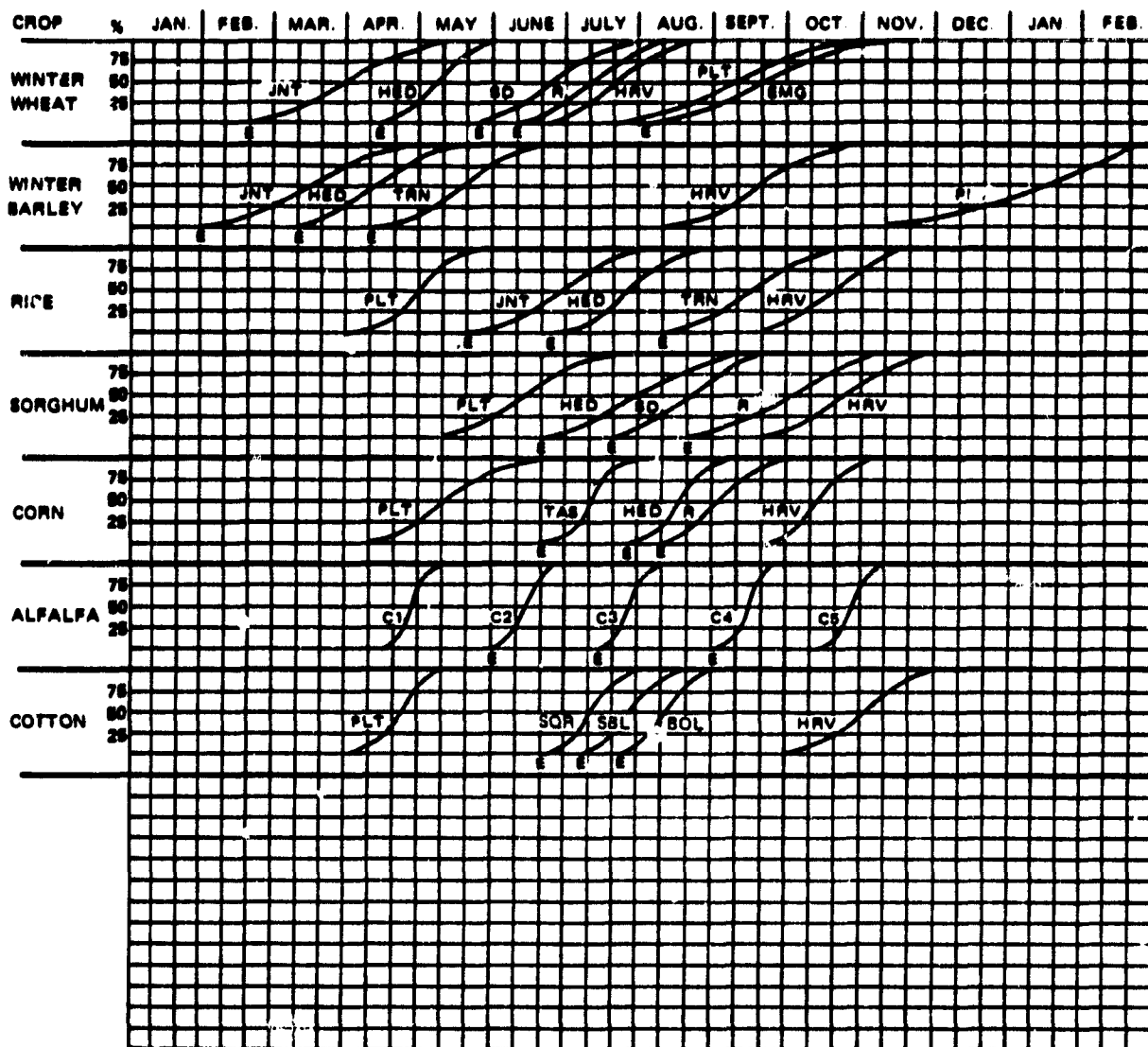


LEGEND

E Under stage name, indicates rough estimate of date
EMG Emergence
HED Heading
HRV Harvest
JNT Jointing
PLT Planting
R Ripe
SD Soft dough
TRN Turning
C Cut
FLR Flowering
TAS Tasseling
SQR Squaring
SBL Soft boiling
BOL Boiling

ORIGINAL PAGE IS OF POOR QUALITY

CROP CALENDARS PLOTTED 01/06/76
PERCENT OF AREA IN DEVELOPMENT STAGE BY SPECIFIED DATE FOR
CALIFORNIA CRD 51 ESTIMATED AVERAGE CROP CALENDARS FROM USDA BULLETIN 28

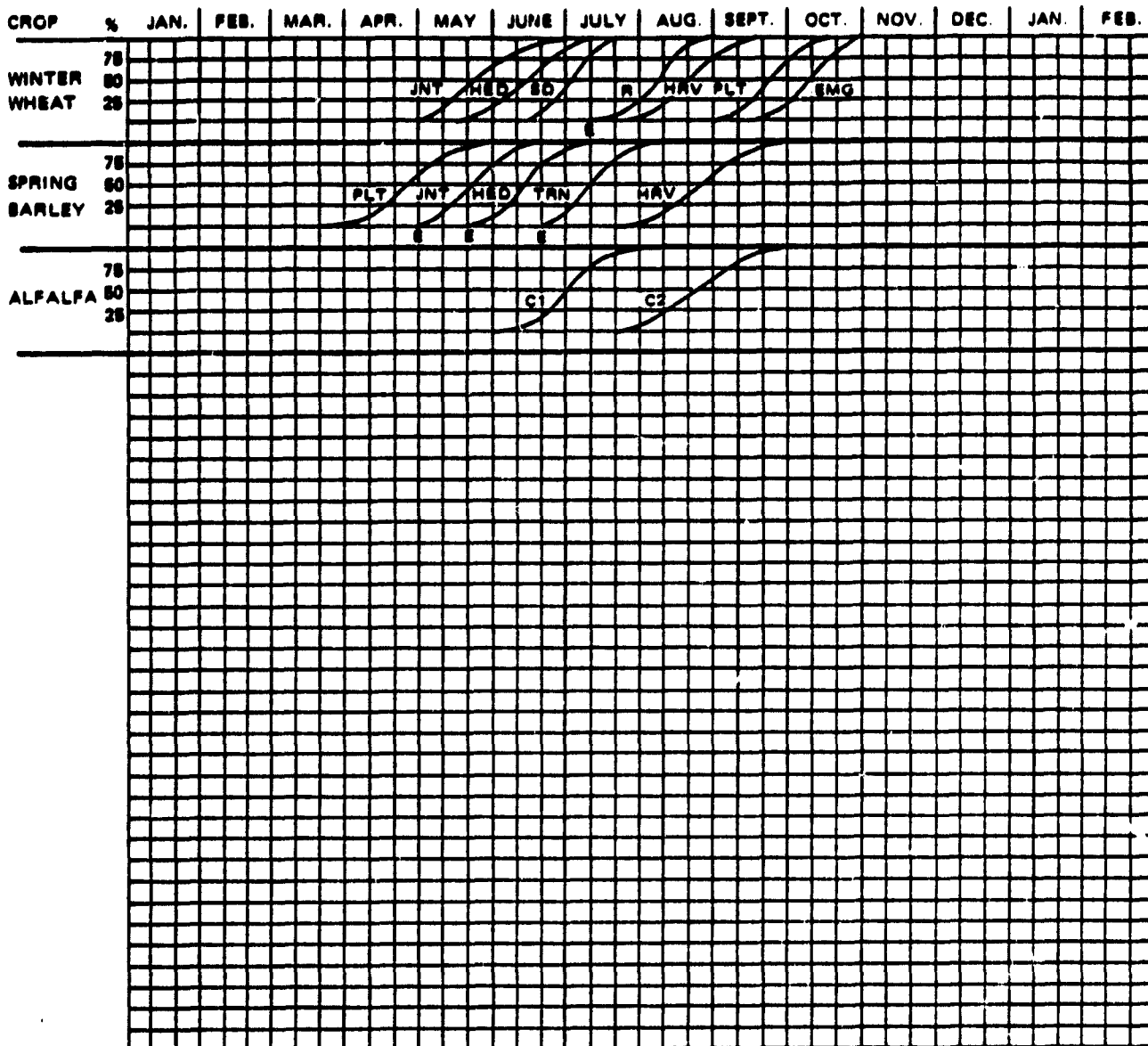


LEGEND

E	Under stage name, indicates rough estimate of date
EMG	Emergence
HED	Heading
HRV	Harvest
JNT	Jointing
PLT	Planting
R	Ripe
SD	Soft dough
TRN	Turning
TAS	Tasseling
C	Cut
SQR	Squaring
SBL	Soft boll
BOL	Bolling

ORIGINAL PAGE IS
OF POOR QUALITY

CROP CALENDARS PLOTTED 01/08/76
PERCENT OF AREA IN DEVELOPMENT STAGE BY SPECIFIED DATE FOR
COLORADO CRD 10 AVERAGE CROP CALENDARS FROM 1971 TO 1973

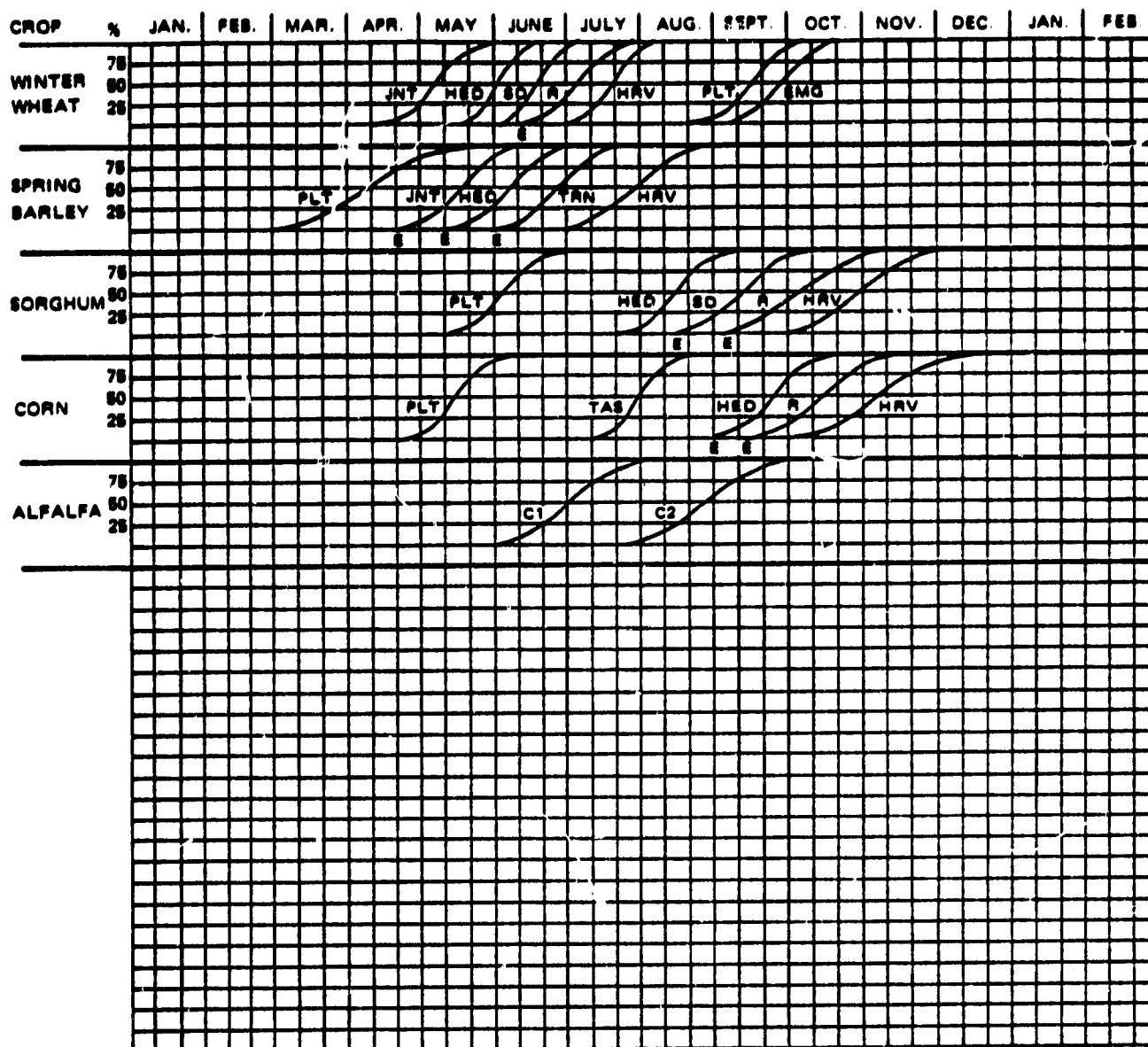


LEGEND

E Under stage name, indicates rough estimate of date
 EMG Emergence
 HED Heading
 HRV Harvest
 JNT Jointing
 PLT Planting
 R Ripe
 SD Soft dough
 TRN Turning
 C Cut

ORIGINAL PAGE IS OF POOR QUALITY

CROP CALENDARS PLOTTED 01/08/78
PERCENT OF AREA IN DEVELOPMENT STAGE BY SPECIFIED DATE FOR
COLORADO CRD 20 AVERAGE CROP CALENDARS FROM 1971 TO 1973

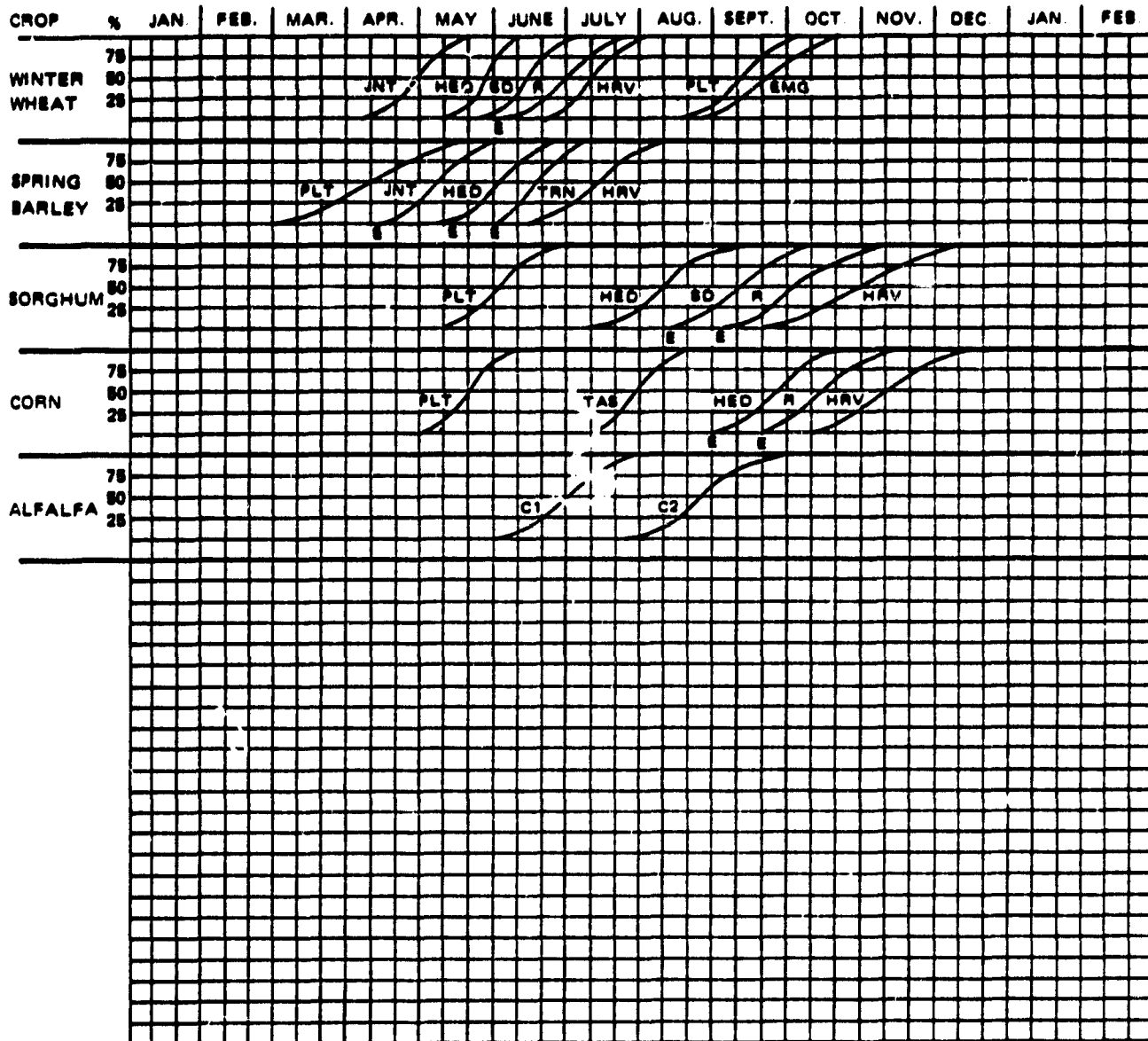


LEGEND

E Under stage name, indicates rough estimate of date
EMG Emergence
HED Heading
HRV Harvest
JNT Jointing
PLT Planting
R Ripe
SD Soft dough
TRN Turning
TAS Tasseling
C Cut

ORIGINAL PAGE IS OF POOR QUALITY

CROP CALENDARS PLOTTED 01/06/78
PERCENT OF AREA IN DEVELOPMENT STAGE BY SPECIFIED DATE FOR
COLORADO CRD 60 AVERAGE CROP CALENDARS FROM 1971 TO 1973

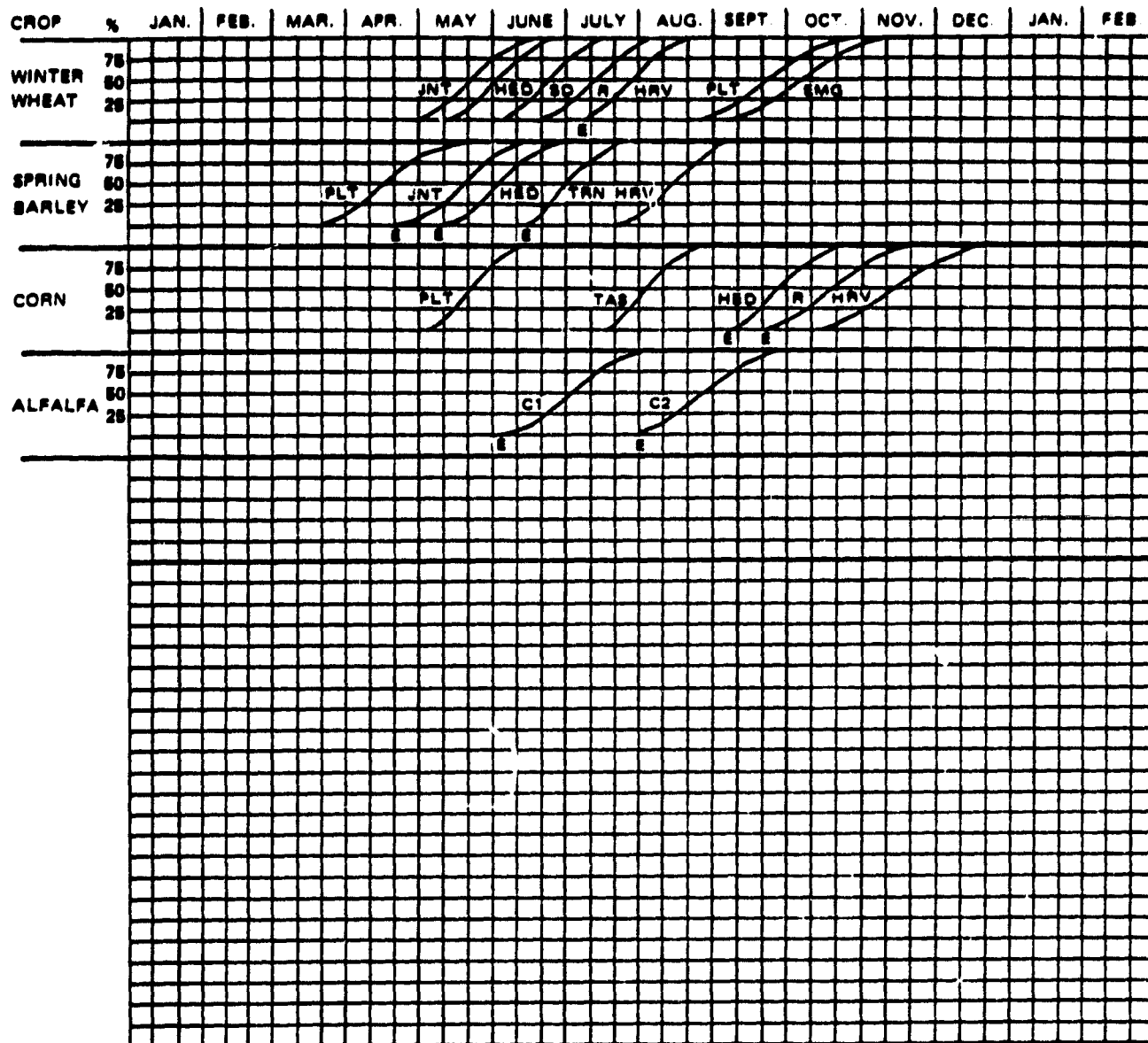


LEGEND

E Under stage name, indicates rough estimate of date
EMG Emergence
HED Heading
HRV Harvest
JNT Jointing
PLT Planting
R Ripe
SD Soft dough
TRN Turning
TAS Tasselling
C Cut

ORIGINAL PAGE IS
OF POOR QUALITY

CROP CALENDARS PLOTTED 01/08/78
PERCENT OF AREA IN DEVELOPMENT STAGE BY SPECIFIED DATE FOR
COLORADO CRD 70 AVERAGE CROP CALENDARS FROM 1971 TO 1973

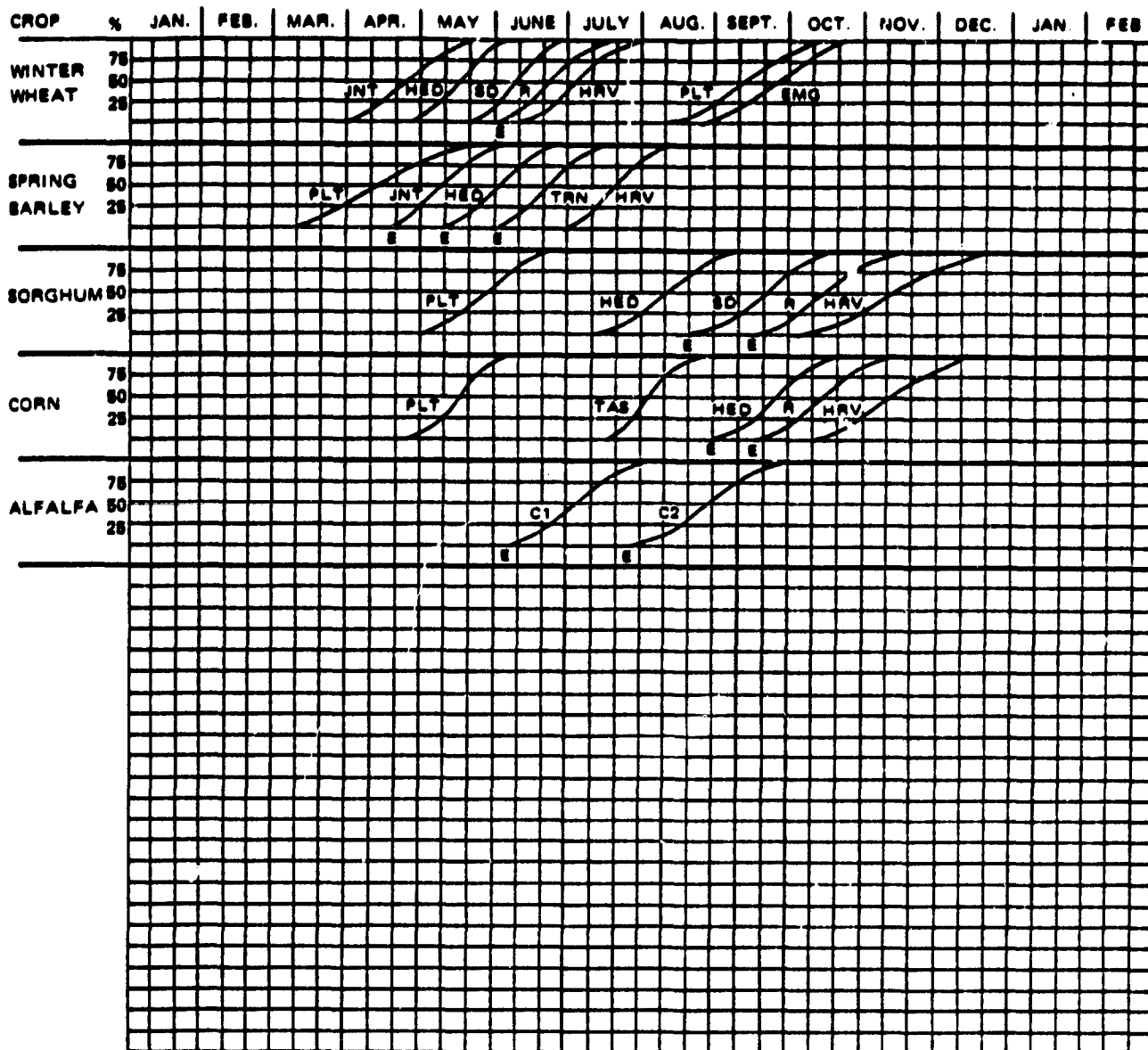


LEGEND

E Under stage name, indicates rough estimate of date
 EMG Emergence
 HED Heading
 HRV Harvest
 JNT Jointing
 PLT Planting
 R Ripe
 SD Soft dough
 TRN Turning
 TAS Tasseling
 C Cut

ORIGINAL PAGE IS
OF POOR QUALITY

CROP CALENDARS PLOTTED 01/06/76
PERCENT OF AREA IN DEVELOPMENT STAGE BY SPECIFIED DATE FOR
COLORADO CRD 90 AVERAGE CROP CALENDARS FROM 1971 TO 1973

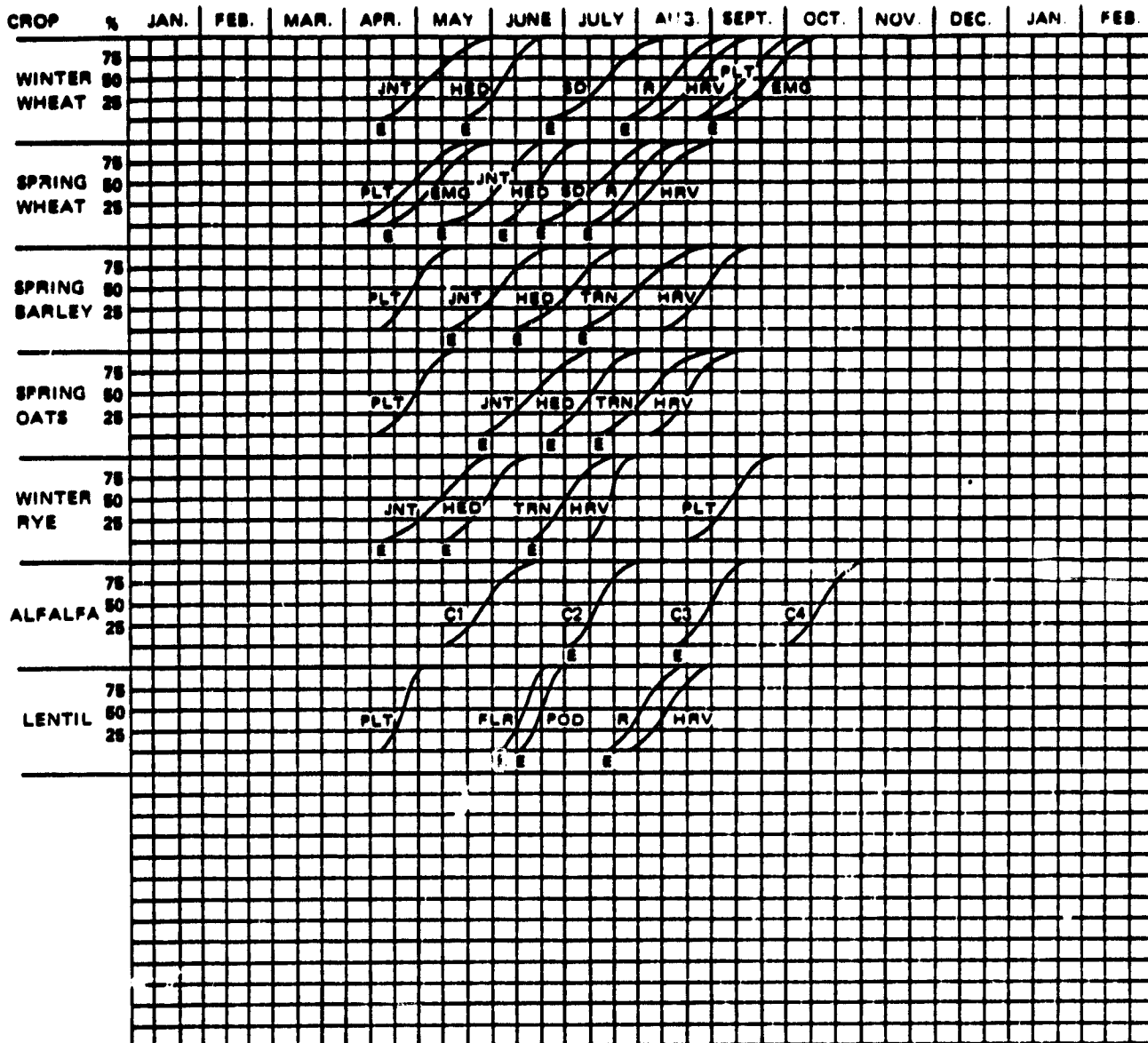


LEGEND

E Under stage name, indicates rough estimate of date
 EMG Emergence
 HED Heading
 HRV Harvest
 JNT Jointing
 PLT Planting
 R Ripe
 SD Soft dough
 TRN Turning
 C Cut
 TAS Tasseling

ORIGINAL PROPERTY
OF POOR QUALITY

CROP CALENDARS PLOTTED 01/06/76
PERCENT OF AREA IN DEVELOPMENT STAGE BY SPECIFIED DATE FOR
IDAHO CRD 9 ESTIMATED CROP CALENDARS FROM USDA BULLETIN 283

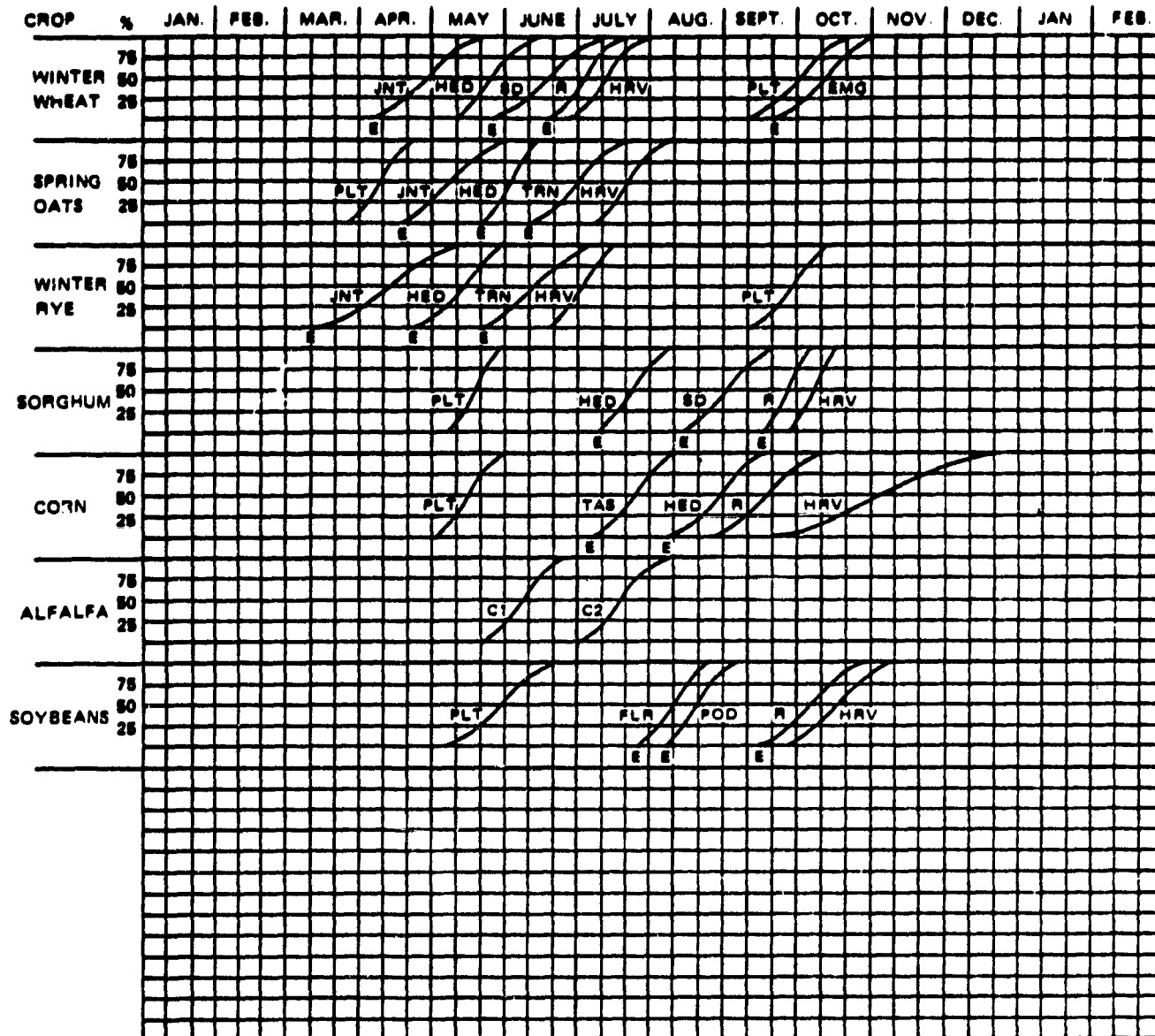


LEGEND

E Under stage name, indicates rough estimate of date
 EMG Emergence
 HED Heading
 HARV Harvest
 JNT Jointing
 PLT Planting
 R Ripe
 SD Soft dough
 TRN Turning
 C Cut
 FLR Flowering

ORIGINAL PAGE IS
OF POOR QUALITY

CROP CALENDARS PLOTTED 01/06/76
PERCENT OF AREA IN DEVELOPMENT STAGE BY SPECIFIED DATE FOR
INDIANA CRD 1-ESTIMATED AVERAGE CROP CALENDARS FROM USDA BULLETIN 283

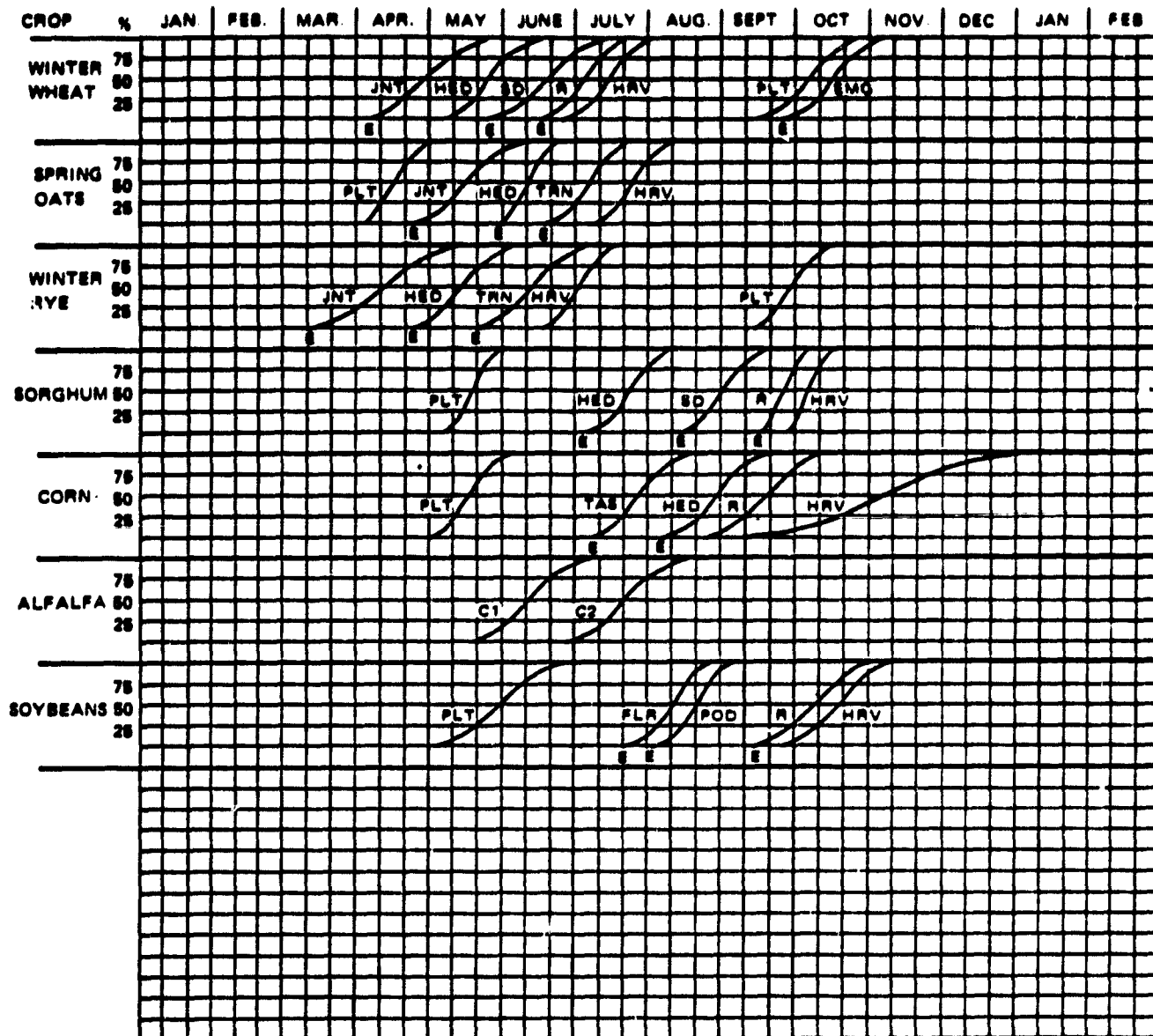


LEGEND

E Under stage name, indicates rough estimate of date
EMG Emergence
HED Heading
HRV Harvest
JNT Jointing
PLT Planting
R Ripe
SD Soft dough
TRN Turning
TAS Tasseling
C Cut
FLR Flowering

ORIGINAL PAGE IS
OF POOR QUALITY

CROP CALENDARS PLOTTED 01/06/76
PERCENT OF AREA IN DEVELOPMENT STAGE BY SPECIFIED DATE FOR
INDIANA CRD 2 ESTIMATED AVERAGE CROP CALENDARS FROM USDA BULLETIN 283

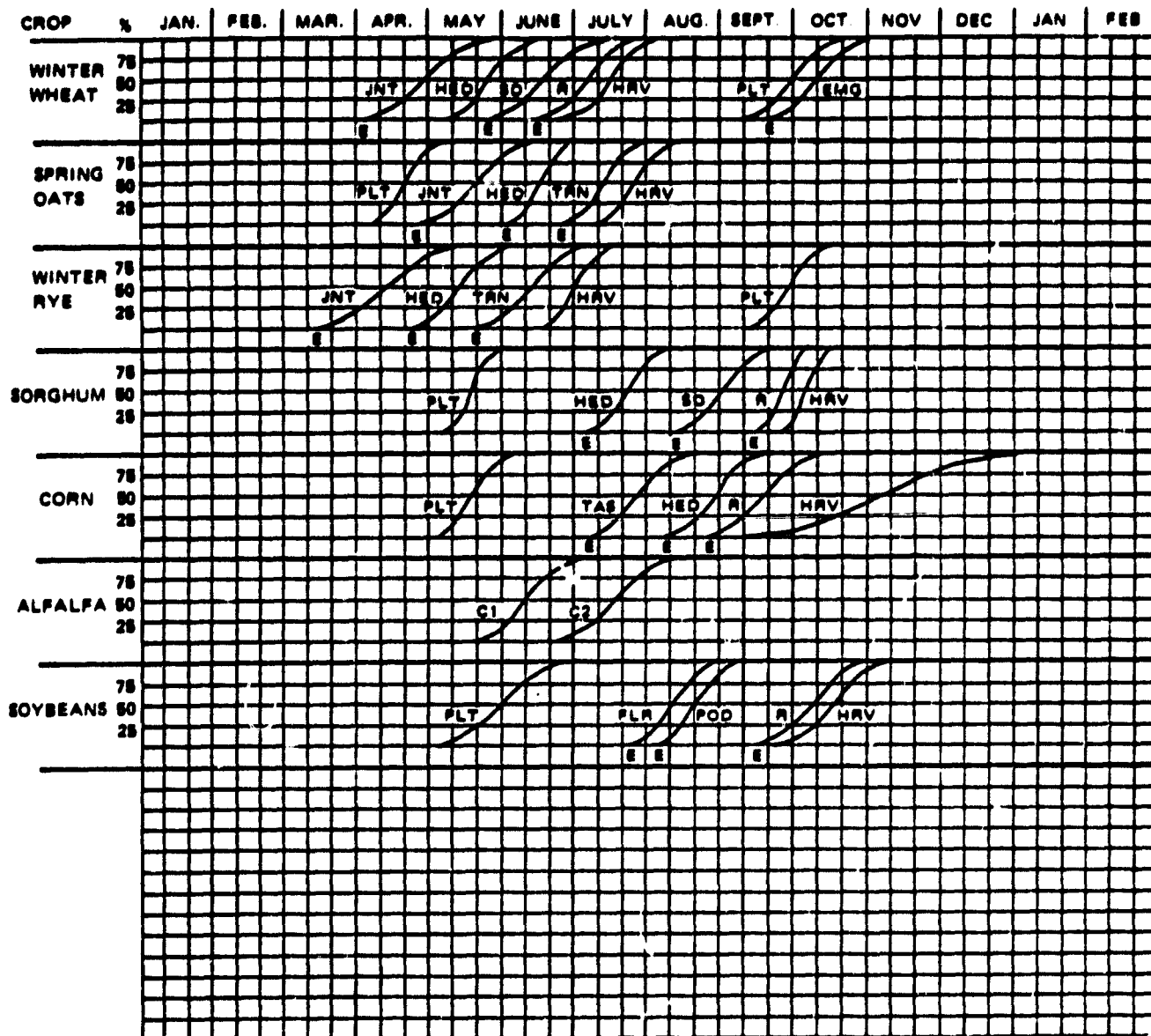


LEGEND

E Under stage name, indicates rough estimate of date
 EM3 Emergence
 HED Heading
 HRV Harvest
 JNT Jointing
 PLT Planting
 R Ripe
 SD Soft dough
 TRN Turning
 TAS Tasseling
 C Cut
 FLR Flowering

ORIGINAL PAGE IS
OF POOR QUALITY

CROP CALENDARS PLOTTED 01/08/78
PERCENT OF AREA IN DEVELOPMENT STAGE BY SPECIFIED DATE FOR
INDIANA CRD 3. ESTIMATED AVERAGE CROP CALENDARS FROM USDA BULLETIN 283

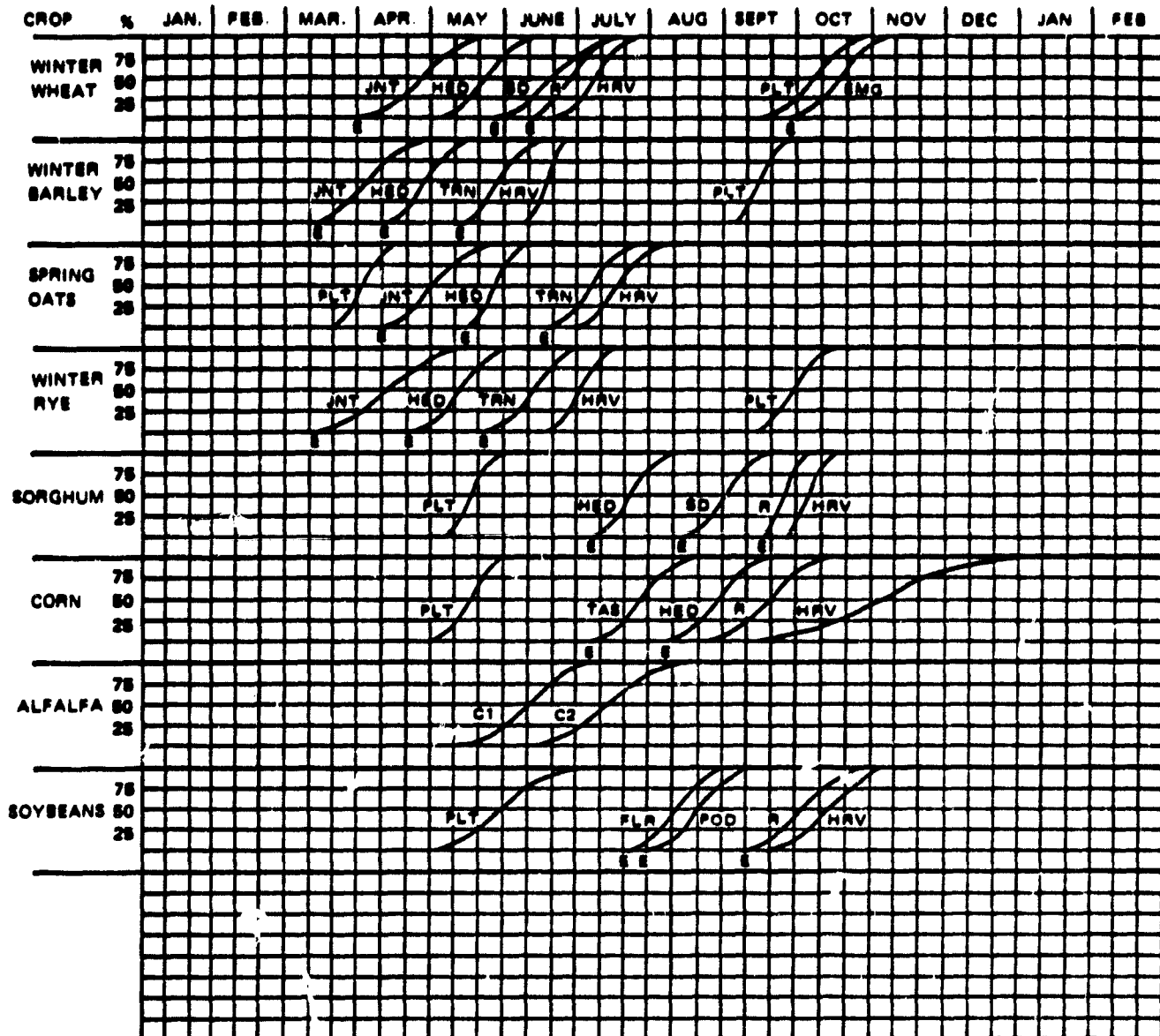


LEGEND

E Under stage name, indicates rough estimate of date
 EMG Emergence
 HED Heading
 HRV Harvest
 JNT Jointing
 PLT Planting
 R Ripe
 SD Soft dough
 TAN Turning
 TAS Tasseling
 C Cut
 FLR Flowering

ORIGINAL PAGE IS
OF POOR QUALITY

CROP CALENDARS PLOTTED 61/08/78
PERCENT OF AREA IN DEVELOPMENT STAGE BY SPECIFIED DATE FOR
INDIANA CRD 4, ESTIMATED AVERAGE CROP CALENDARS FROM USDA BULLETIN 283

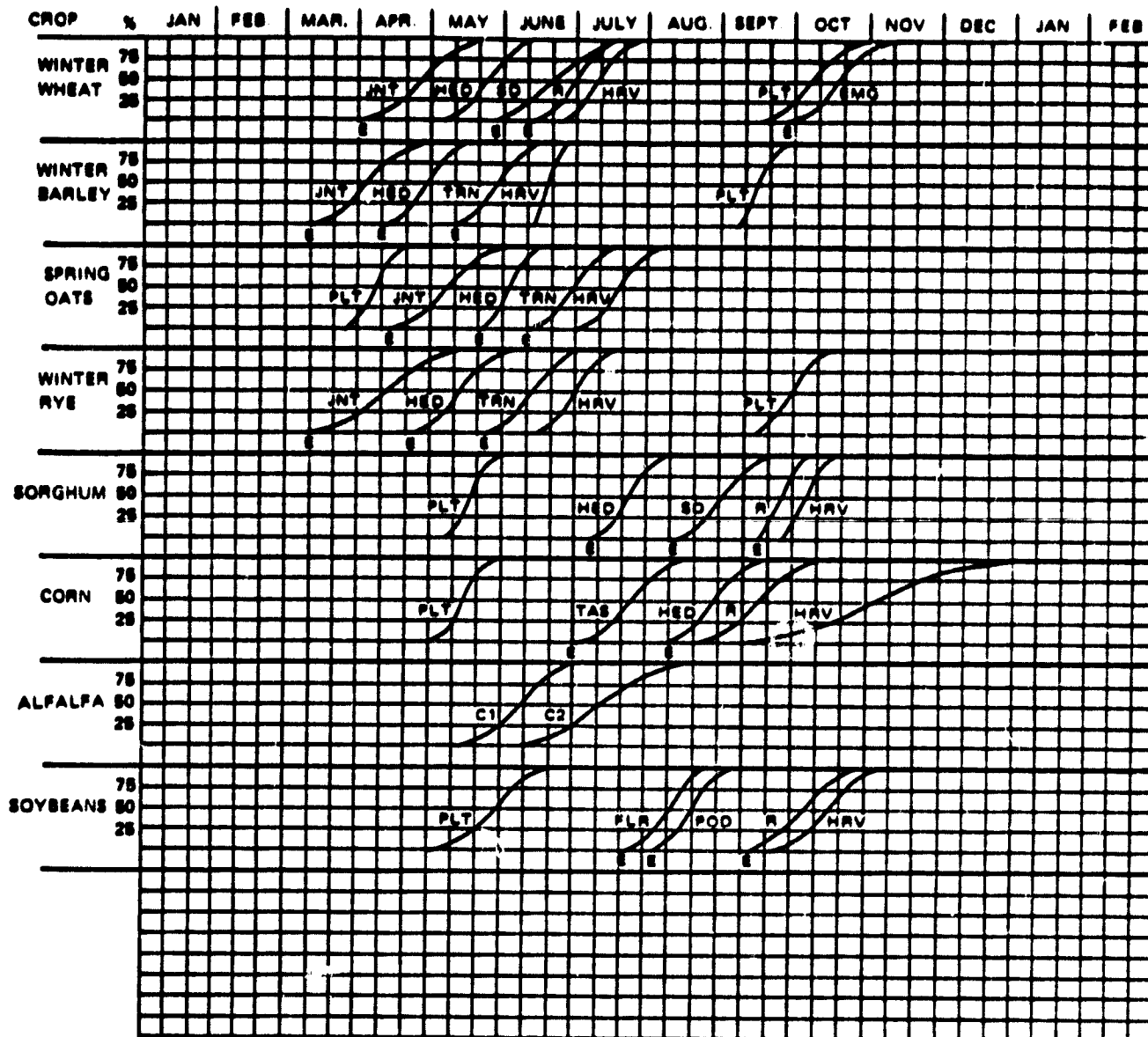


LEGEND

- E Under stage name, indicates rough estimate of date
- EMG Emergence
- HED Heading
- HRV Harvest
- JNT Jointing
- PLT Planting
- R Ripe
- SD Soft dough
- TRN Turning
- TAS Tasseling
- C Cut
- FLR Flowering

ORIGINAL PAGE IS
OF POOR QUALITY

CROP CALENDARS PLOTTED 01/06/76
PERCENT OF AREA IN DEVELOPMENT STAGE BY SPECIFIED DATE FOR
INDIANA CROPS ESTIMATED AVERAGE CROP CALENDARS FROM USDA BULLETIN 283

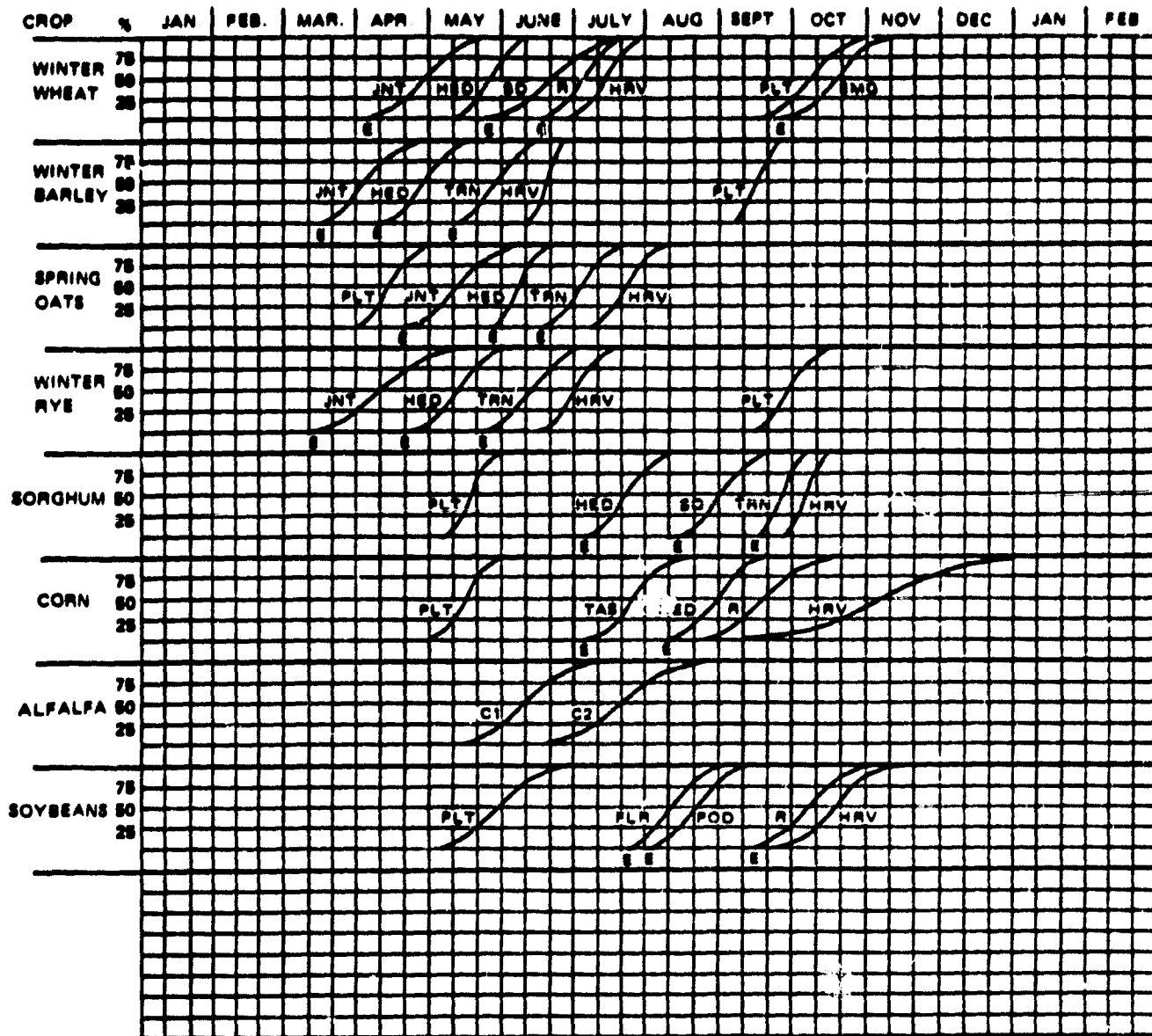


LEGEND

E Under stage name, indicates rough estimate of date
EMG Emergence
HED Heading
HRV Harvest
JNT Jointing
PLT Planting
R Ripe
SD Soft dough
TRN Turning
TAS Tasseling
C Cut
FLR Flowering

ORIGINAL PAGE 13
OF POOR QUALITY

CROP CALENDARS PLOTTED 01/06/76
PERCENT OF AREA IN DEVELOPMENT STAGE BY SPECIFIED DATE FOR
INDIANA CROPS ESTIMATED AVERAGE CROP CALENDARS FROM USDA BULLETIN 283

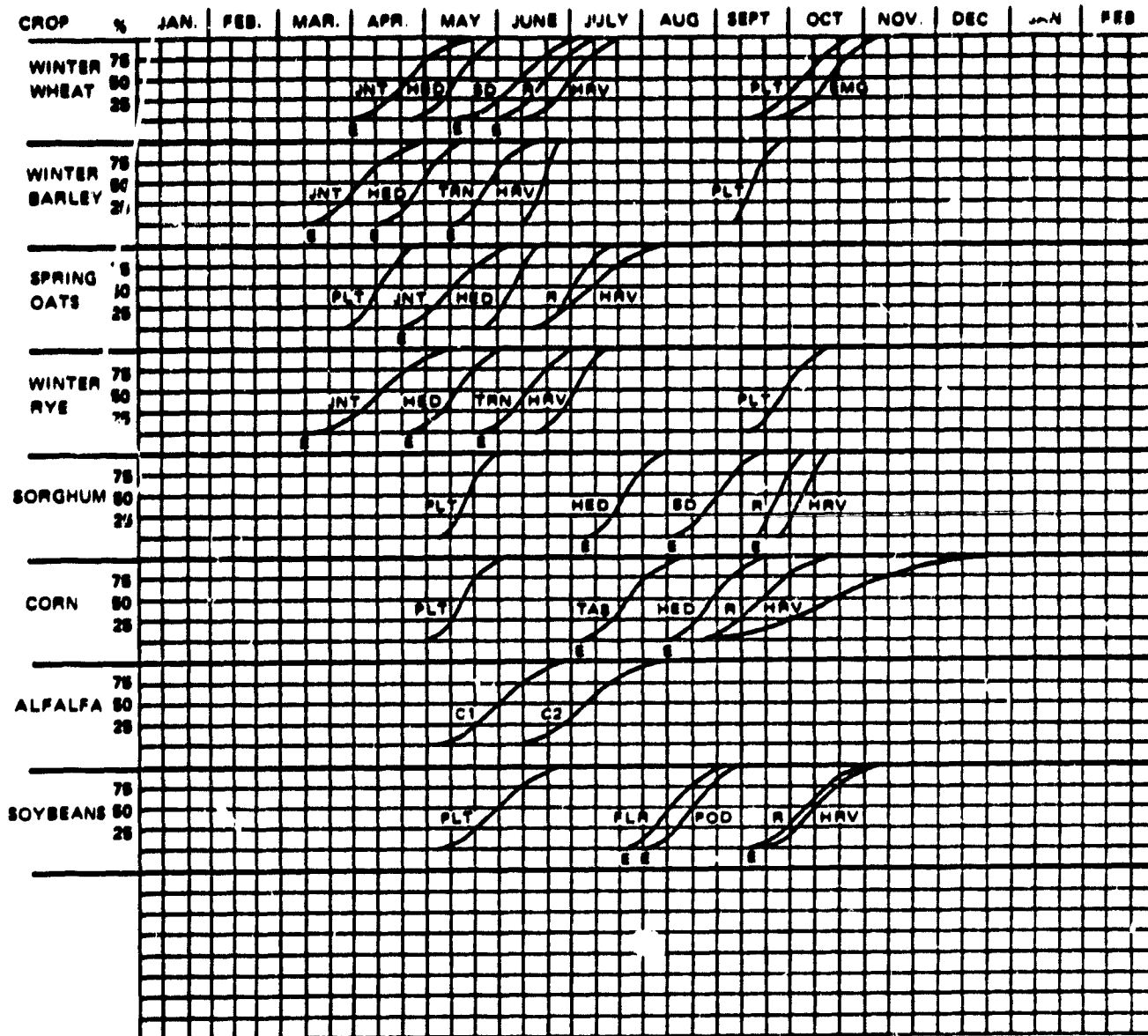


LEGEND

E Under stage name, indicates rough estimate of date
EMG Emergence
HED Heading
HRV Harvest
JNT Jointing
PLT Planting
R Ripe
SD Soft dough
TRN Turning
TAS Tasseling
C Cut
FLR Flowering

ORIGINAL PAGE IS
OF POOR QUALITY

CROP CALENDARS PLOTTED 01/06/76
PERCENT OF AREA IN DEVELOPMENT STAGE BY SPECIFIED DATE FOR
INDIANA CRO 2 ESTIMATED AVERAGE CROP CALENDARS FROM USDA BULLETIN 263

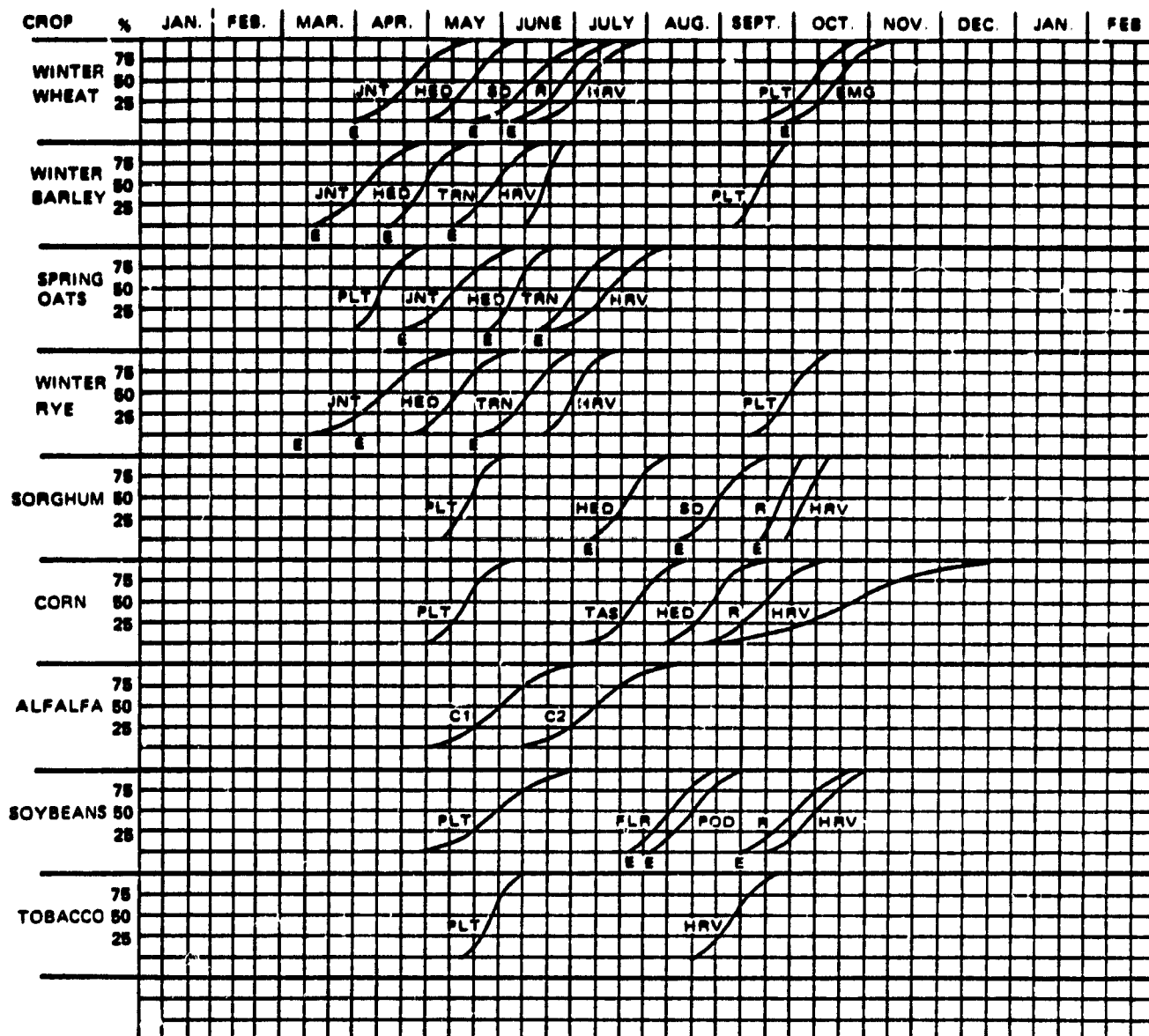


LEGEND

E Under stage name, indicates rough estimate of date
EMG Emergence
HED Heading
HRV Harvest
JNT Jointing
PLT Planting
R Ripe
SD Soft dough
TRN Turning
TAS Tasseling
C Cut
FLR Flowering

ORIGINAL PAGE 13 OF POOR QUALITY

CROP CALENDARS PLOTTED 01/08/78
PERCENT OF AREA IN DEVELOPMENT STAGE BY SPECIFIED DATE FOR
INDIANA CROPS ESTIMATED AVERAGE CROP CALENDARS FROM USDA BULLETIN 283

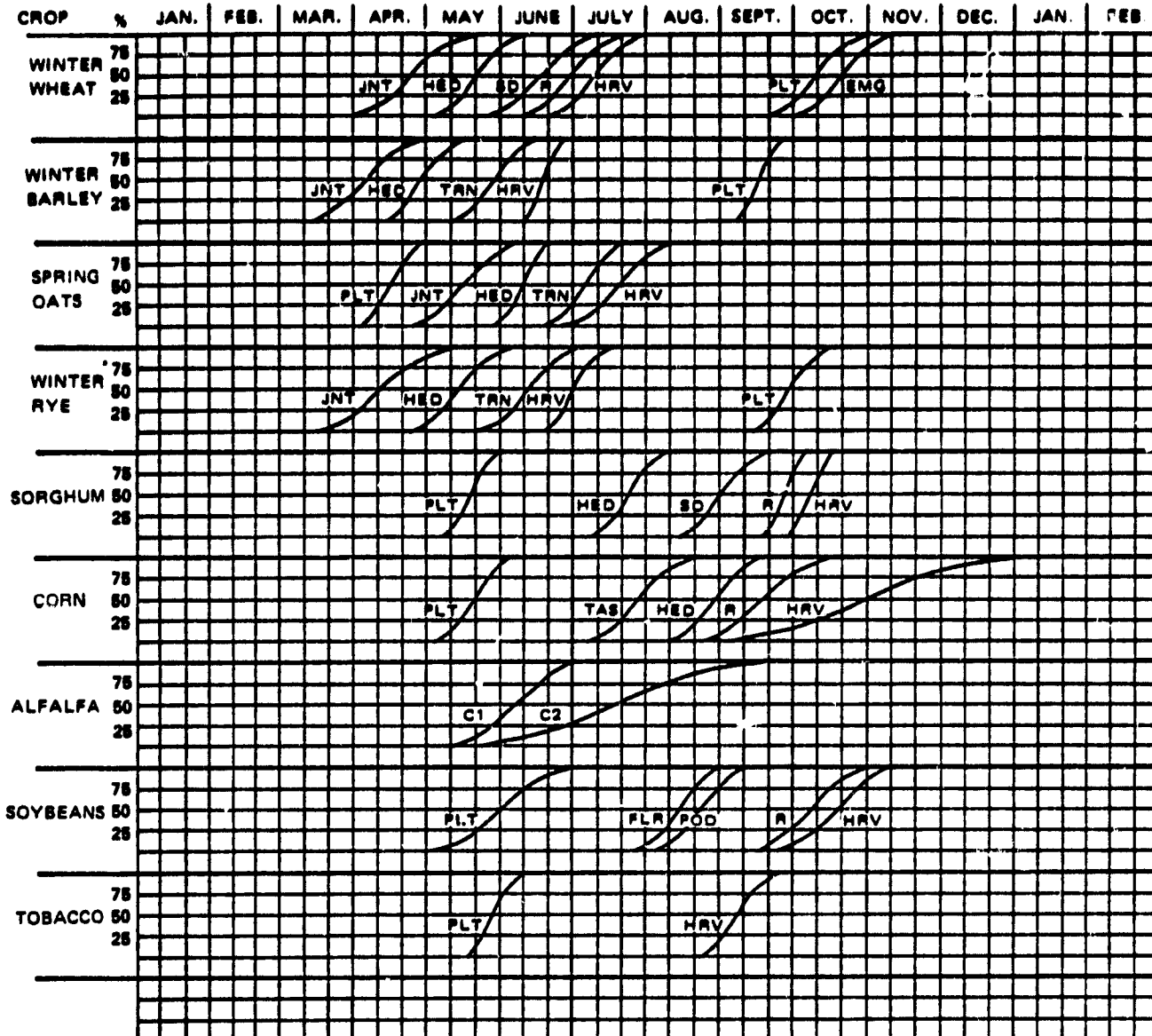


LEGEND

E Under stage name, indicates rough estimate of date
EMG Emergence
HED Heading
HRV Harvest
JNT Jointing
PLT Planting
R Ripe
SD Soft dough
TRN Turning
TAS Tasseling
C Cut
FLR Flowering

ORIGINAL PAGE IS
OF POOR QUALITY

CROP CALENDARS PLOTTED 01/08/78
PERCENT OF AREA IN DEVELOPMENT STAGE BY SPECIFIED DATE FOR
INDIANA CROD 9-ESTIMATED AVERAGE CROP CALENDARS FROM USDA BULLETIN 283

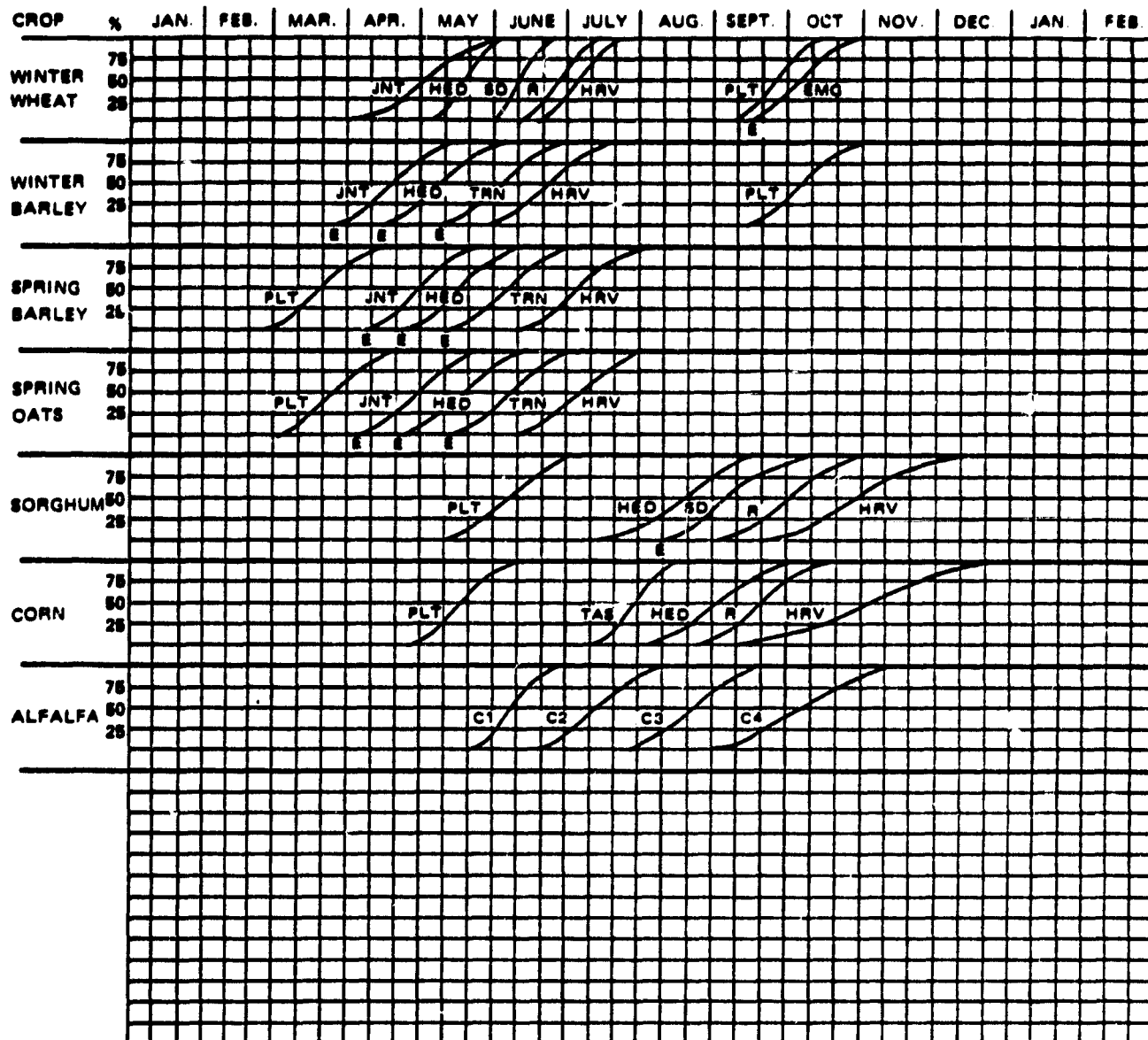


LEGEND

E Under stage name, indicates rough estimate of date
EMG Emergence
HED Heading
HRV Harvest
JNT Jointing
PLT Planting
R Ripe
SD Soft dough
TRN Turning
TAS Tasseling
C Cut
FLR Flowering

ORIGINAL PAGE IS
OF POOR QUALITY

CROP CALENDARS PLOTTED 01/06/76
PERCENT OF AREA IN DEVELOPMENT STAGE BY SPECIFIED DATE FOR
KANSAS CRD 1 AVERAGE CROP CALENDARS FROM 1963 TO 1973

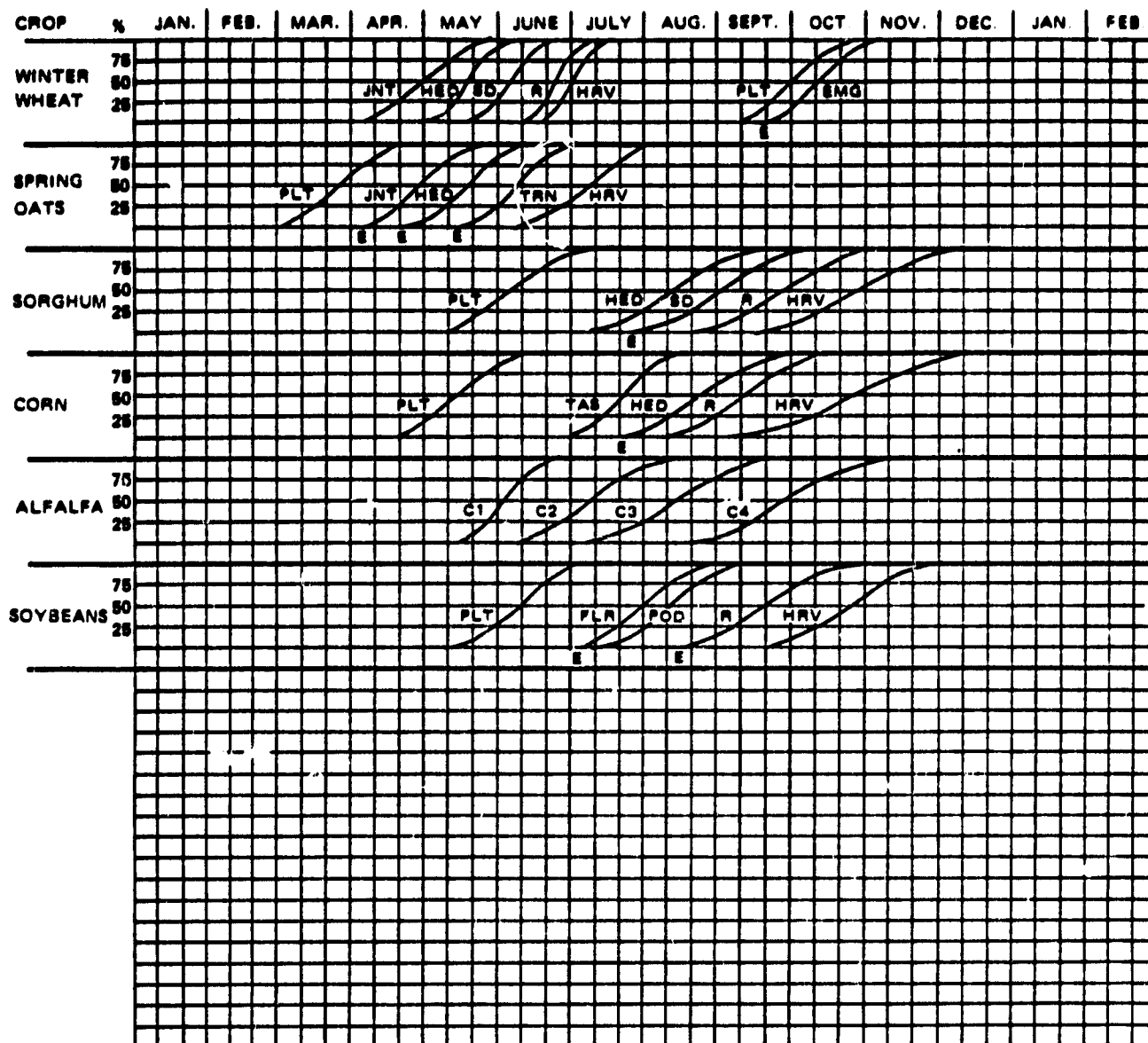


LEGEND

E Under stage name, indicates rough estimate of date
EMG Emergence
HED Heading
HRV Harvest
JNT Jointing
PLT Planting
R Ripe
SD Soft dough
TRN Turning
TAS Tasseling
C Cut

ORIGINAL DRAFT OF POOR QUALITY

CROP CALENDARS PLOTTED 01/06/76
PERCENT OF AREA IN DEVELOPMENT STAGE BY SPECIFIED DATE FOR
KANSAS CRD 2 AVERAGE CROP CALENDARS FROM 1963 TO 1973

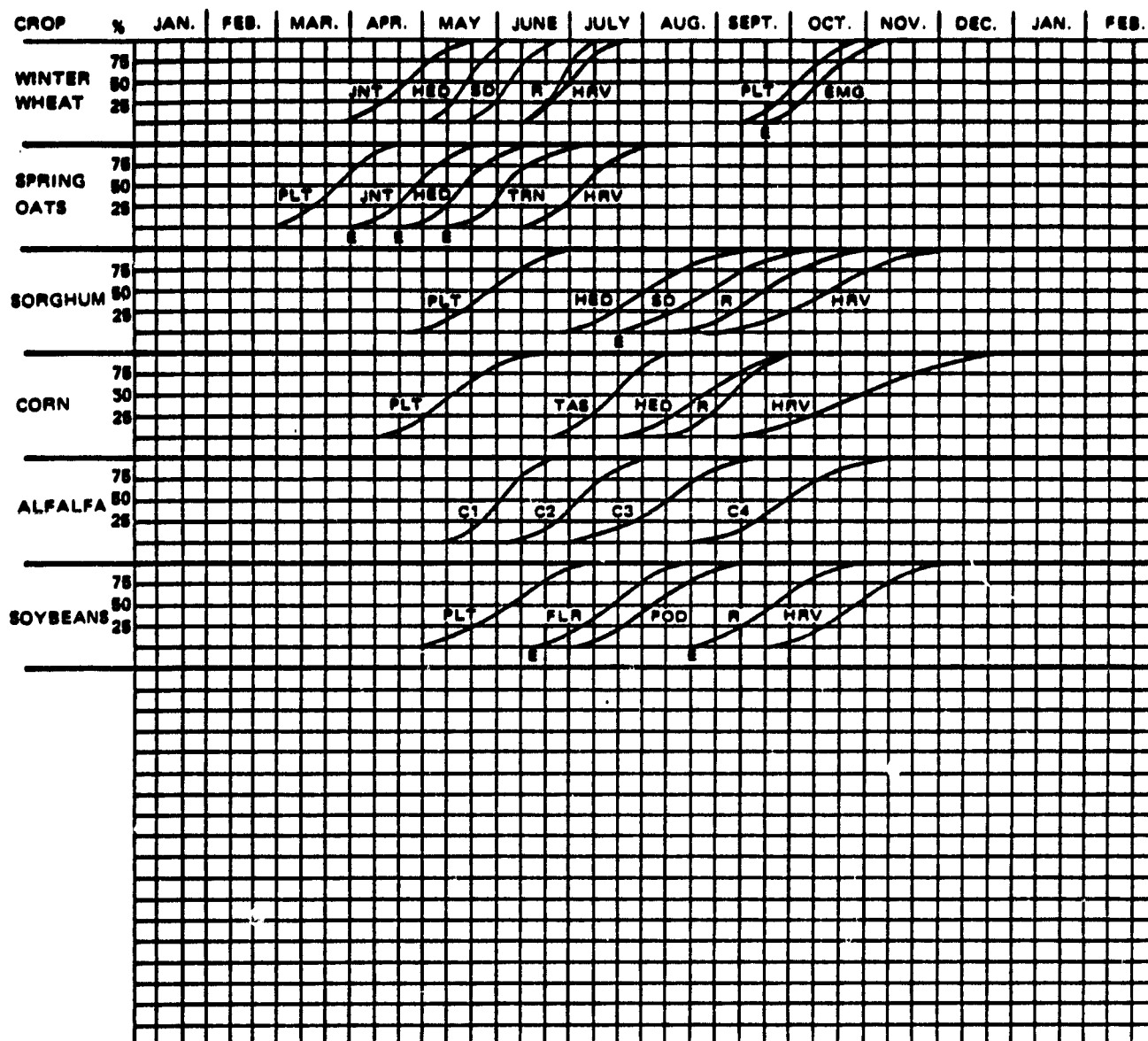


LEGEND

E Under stage name, indicates rough estimate of date
EMG Emergence
HED Heading
HRV Harvest
JNT Jointing
PLT Planting
R Ripe
SD Soft dough
TRN Turning
TAS Tasseling
C Cut
FLR Flowering

ORIGINAL PAGE IS
OF POOR QUALITY

CROP CALENDARS PLOTTED 01/08/78
PERCENT OF AREA IN DEVELOPMENT STAGE BY SPECIFIED DATE FOR
KANSAS CRD 3 AVERAGE CROP CALENDARS FROM 1963 TO 1973

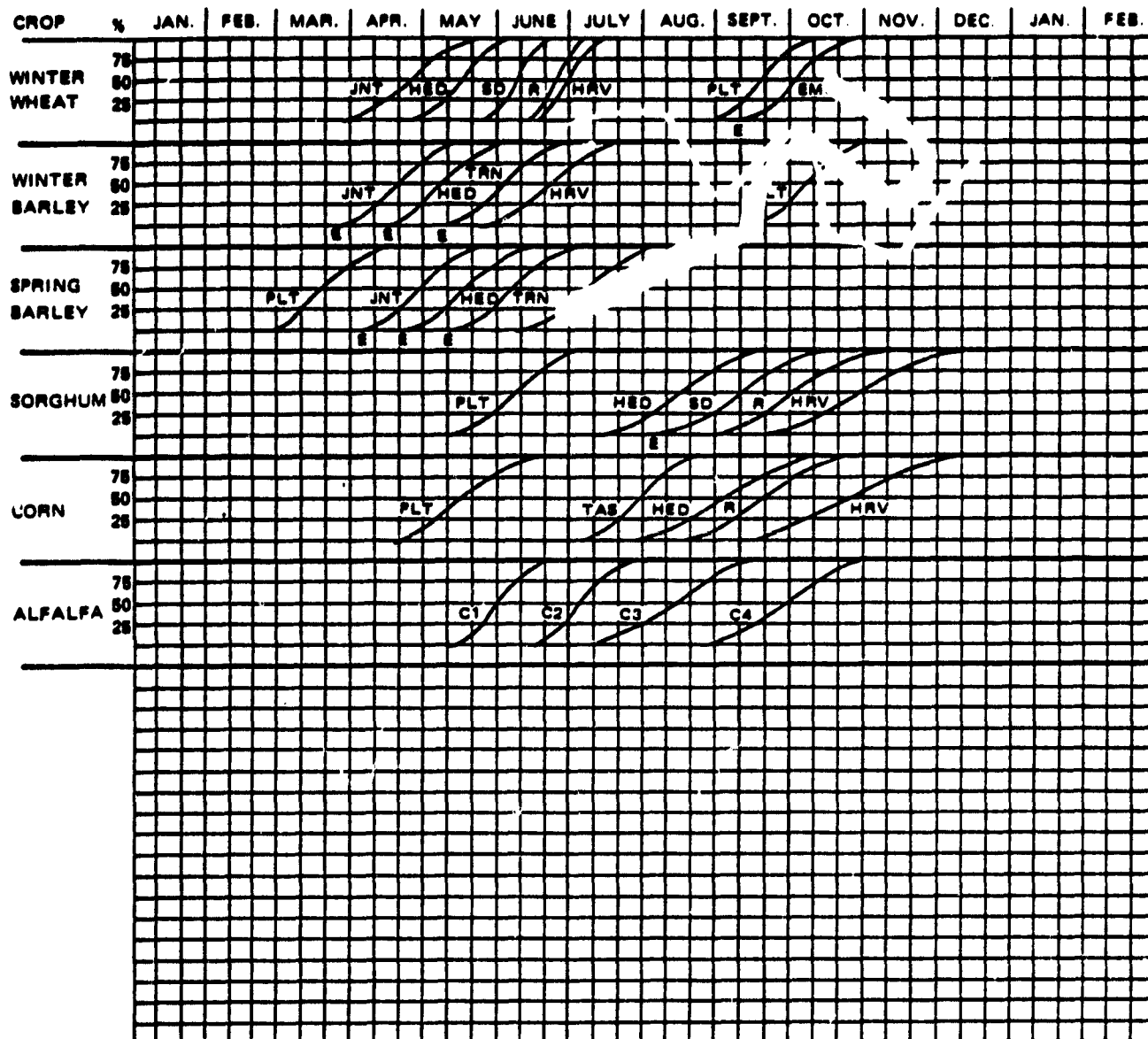


LEGEND

E Under stage name, indicates rough estimate of date
EMG Emergence
HED Heading
HRV Harvest
JNT Jointing
PLT Planting
R Ripe
SD Soft dough
TRN Turning
TAS Tasseling
C Cut
FLR Flowering

ORIGINAL PAGE IS
OF POOR QUALITY

CROP CALENDARS PLOTTED 01/06/76
PERCENT OF AREA IN DEVELOPMENT STAGE BY SPECIFIED DATE FOR
KANSAS CRO 4 AVERAGE CROP CALENDARS FROM 1963 TO 1973

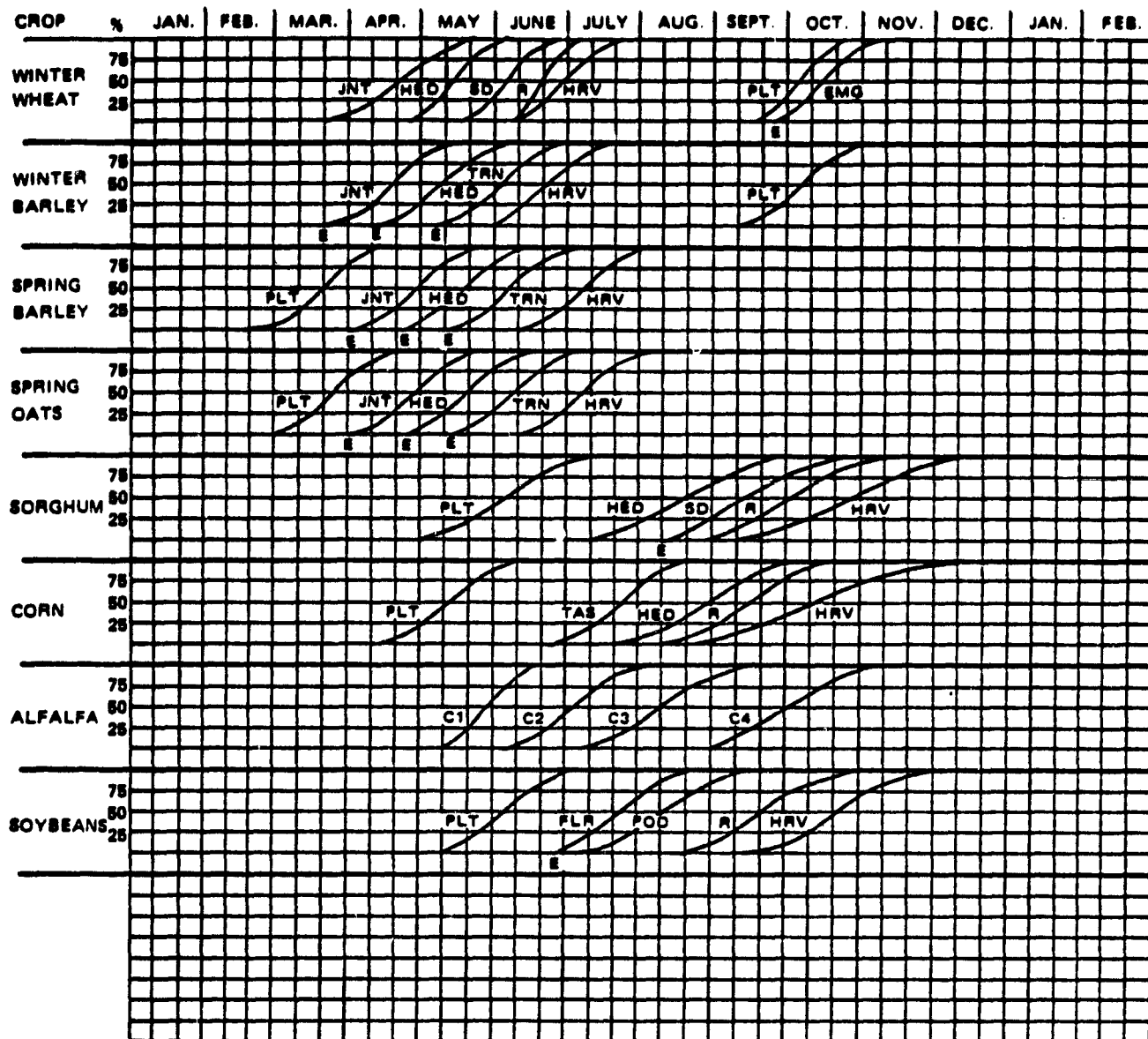


LEGEND

E Under stage name, indicates rough estimate of date
EMG Emergence
HED Heading
HRV Harvest
JNT Jointing
PLT Planting
R Ripe
SD Soft dough
TRN Turning
TAS Tasselling
C Cut

ORIGINAL PAGE IS
OF POOR QUALITY

CROP CALENDARS PLOTTED 01/08/78
PERCENT OF AREA IN DEVELOPMENT STAGE BY SPECIFIED DATE FOR
KANSAS CRD 5 AVERAGE CROP CALENDARS FROM 1963 TO 1973

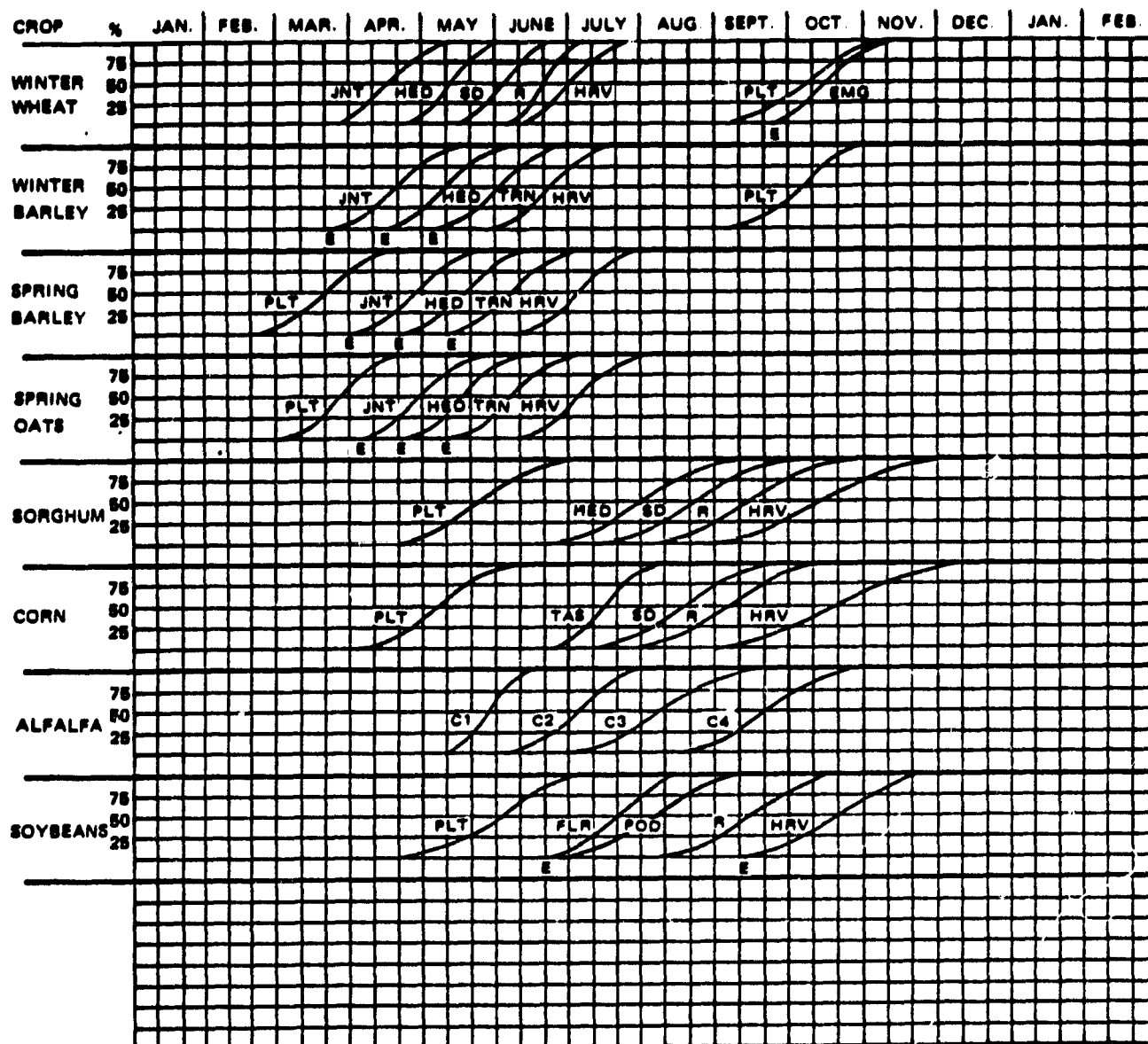


LEGEND

E Under stage name, indicates rough estimate of date
EMG Emergence
HED Heading
HRV Harvest
JNT Jointing
PLT Planting
R Ripe
SD Soft dough
TRN Turning
TAS Tasseling
C Cut
FLR Flowering

ORIGINAL PAGE IS
OF POOR QUALITY

CROP CALENDARS PLOTTED 01/06/8
PERCENT OF AREA IN DEVELOPMENT STAGE BY SPECIFIED DATE FOR
KANSAS CRD 6 AVERAGE CROP CALENDARS FROM 1963 TO 1973

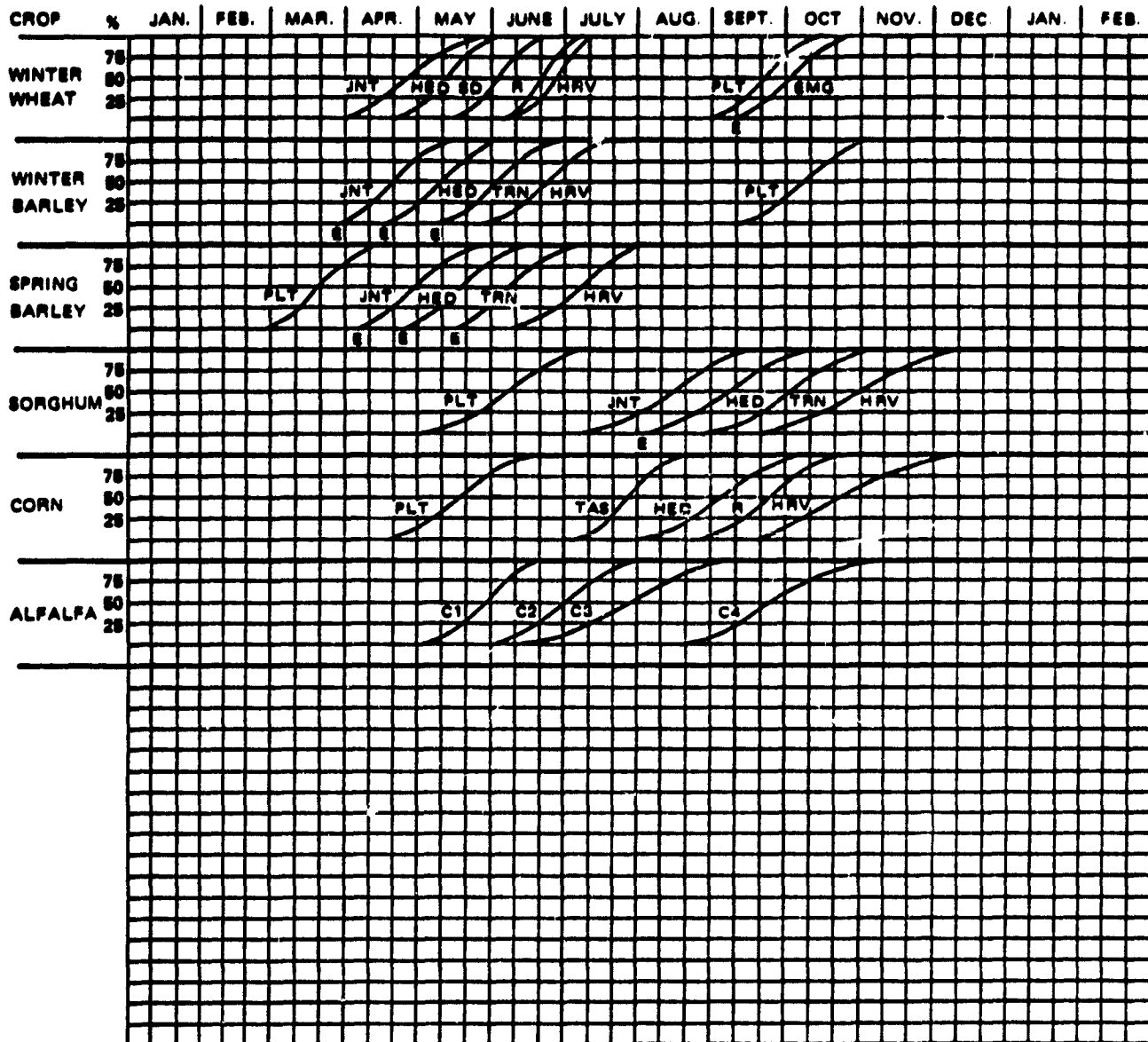


LEGEND

E Under stage name, indicates rough estimate of date
EMG Emergence
HED Heading
HRV Harvest
JNT Jointing
PLT Planting
R Ripe
SD Soft dough
TRN Turning
FLR Flowering
C Cut
TAS Tasseling

ORIGINAL PAGE IS
OF POOR QUALITY

CROP CALENDARS PLOTTED 01/06/76
PERCENT OF AREA IN DEVELOPMENT STAGE BY SPECIFIED DATE FOR
KANSAS CRD 7 AVERAGE CROP CALENDARS FROM 1963 TO 1973

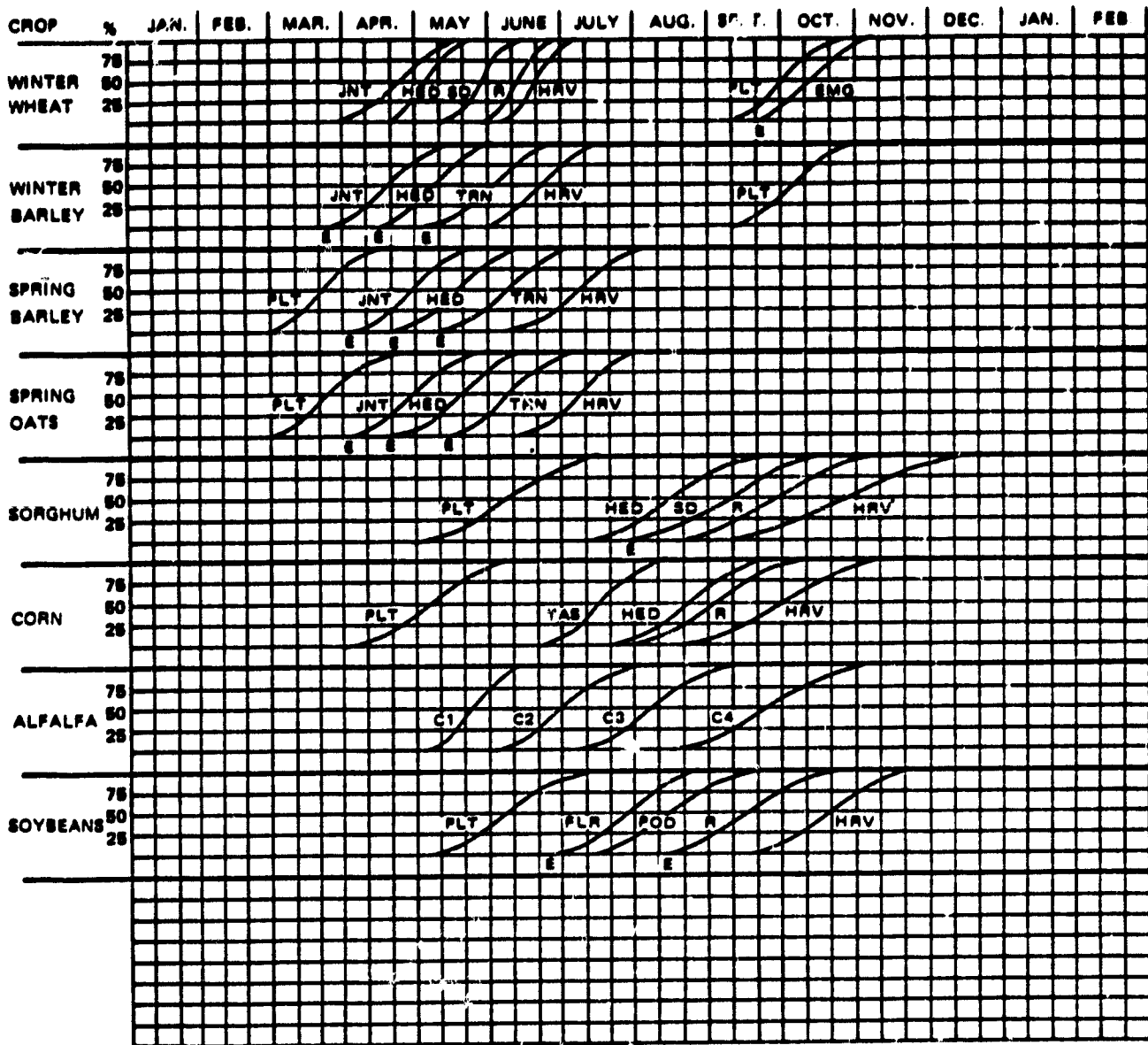


LEGEND

E Under stage name, indicates rough estimate of date
EMG Emergence
HED Heading
HRV Harvest
JNT Jointing
PLT Planting
R Ripe
SD Soft dough
TRN Turning
TAS Tasseling
C Cut

ORIGINAL PAGE IS
OF POOR QUALITY

CROP CALENDARS PLOTTED 01/08/76
PERCENT OF AREA IN DEVELOPMENT STAGE BY SPECIFIED DATE FOR
KANSAS CRO 8 AVERAGE CROP CALENDARS FROM 1963 TO 1973

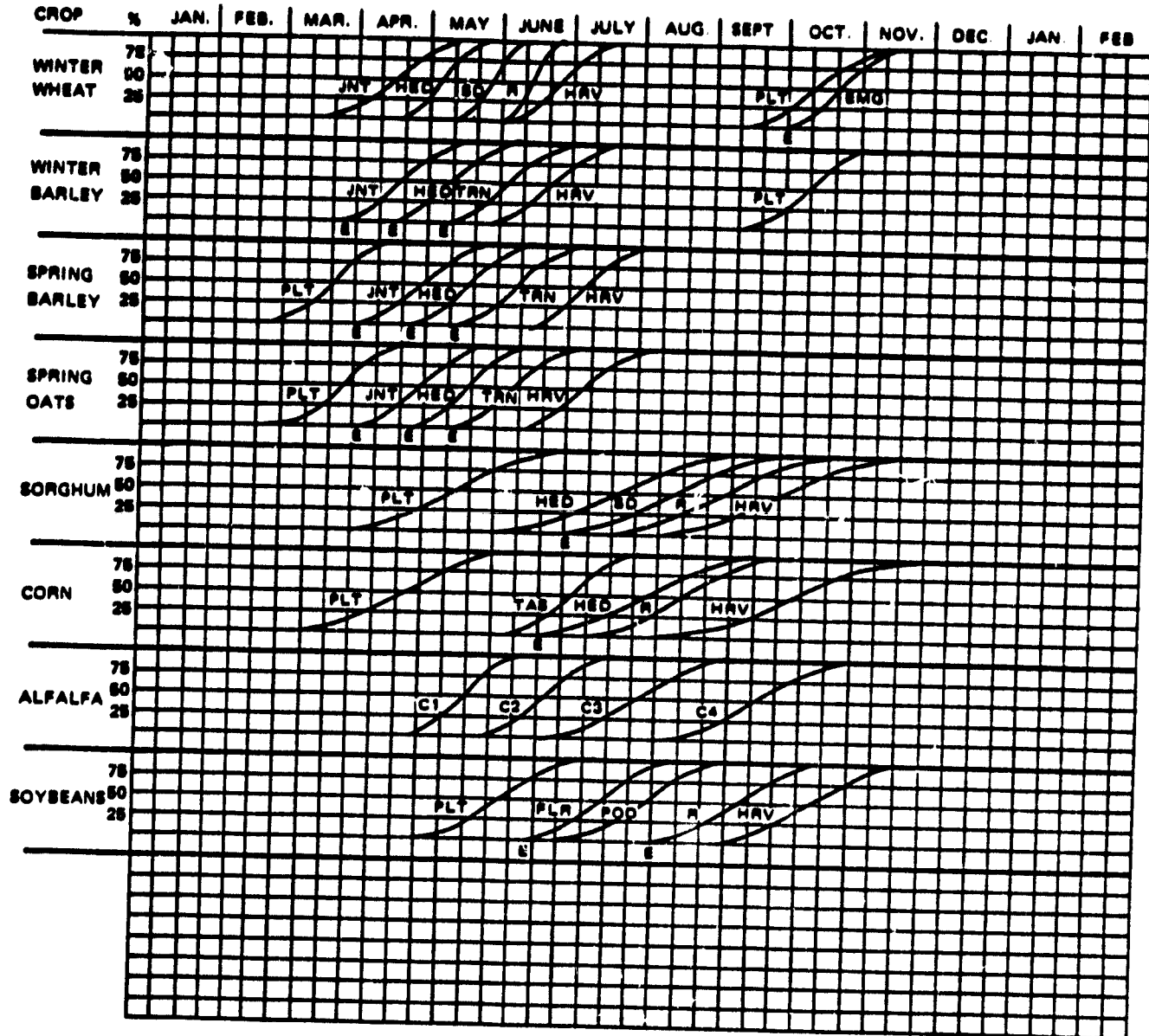


LEGEND

E Under stage name, indicates rough estimate of date
EMG Emergence
HED Heading
HRV Harvest
JNT Jointing
PLT Planting
R Ripe
SD Soft dough
TRN Turning
TAS Tasseling
C Cut
FLR Flowering

ORIGINAL PAGE IS
OF POOR QUALITY

CROP CALENDARS PLOTTED 01/08/78
PERCENT OF AREA IN DEVELOPMENT STAGE BY SPECIFIED DATE FOR
KANSAS CRD 9 AVERAGE CROP CALENDARS FROM 1963 TO 1973

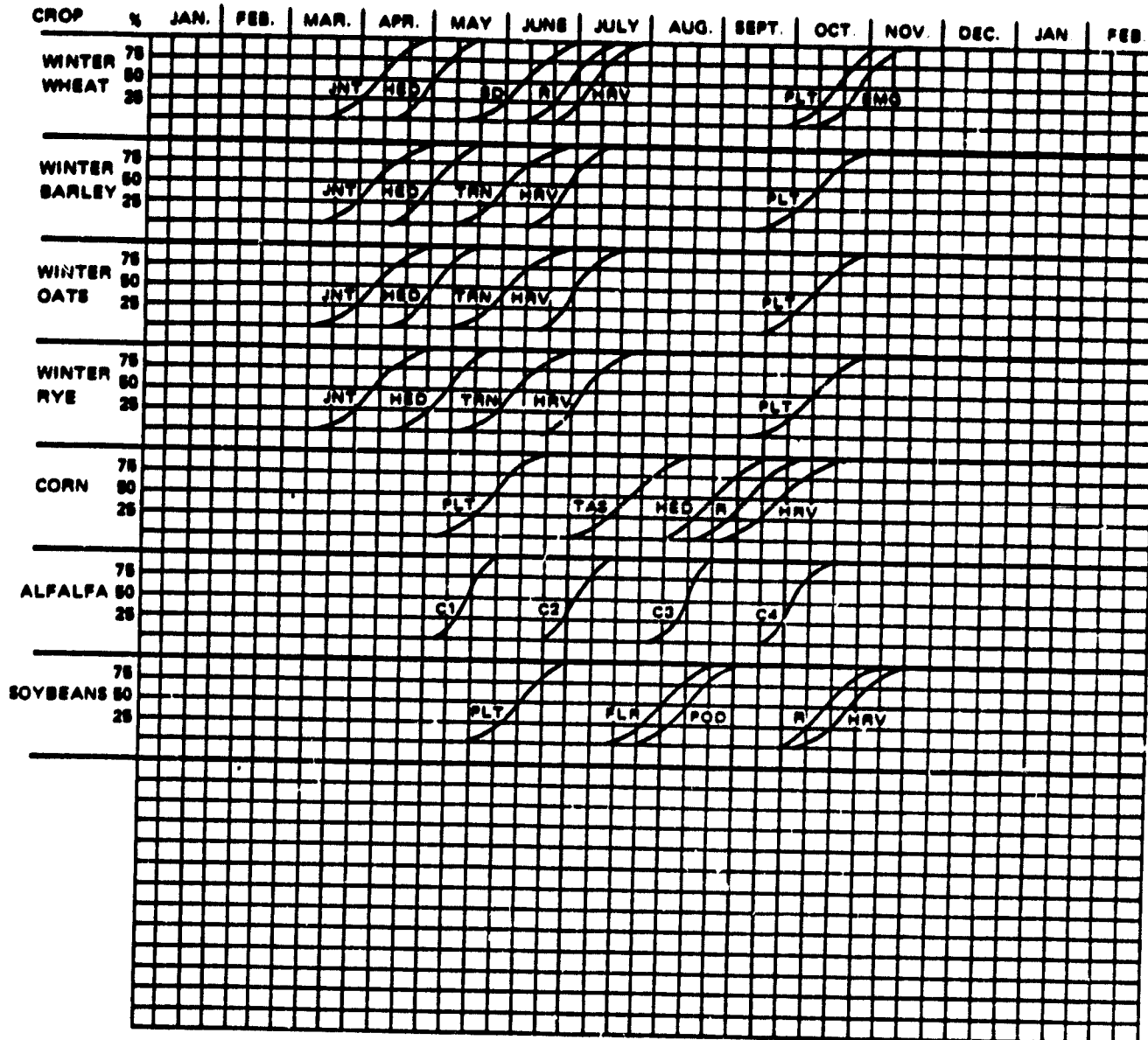


LEGEND

E Under stage name, indicates rough estimate of date
EMG Emergence
HED Heading
HRV Harvest
JNT Jointing
PLT Planting
R Ripe
SD Soft dough
TRN Turning
TAS Tasseling
C Cut
FLR Flower

ORIGINAL VALUE OF POOR QUALITY

CROP CALENDARS PLOTTED 01/08/76
PERCENT OF AREA IN DEVELOPMENT STAGE BY SPECIFIED DATE FOR
MARYLAND CROPS ESTIMATED AVERAGE CROP CALENDARS FROM USDA BULLETIN 283

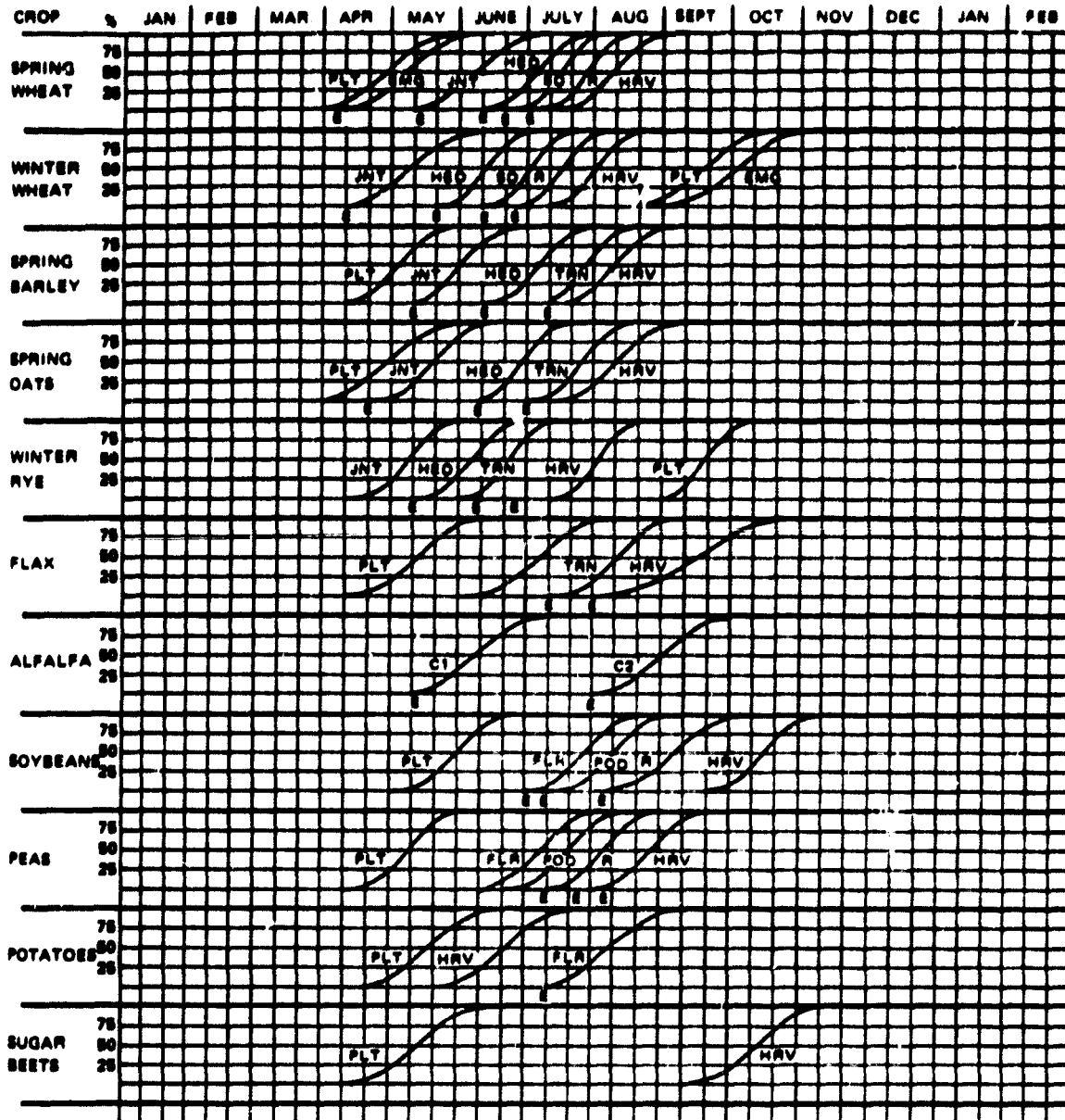


LEGEND

- E Under stage name, indicates rough estimate of date
- EMG Emergence
- HED Heading
- HRV Harvest
- JNT Jointing
- PLT Planting
- R Ripe
- SD Soft dough
- TRN Turning
- TAS Tasseling
- C Cut
- FLR Flowering

ORIGINAL PAGE IS
OF POOR QUALITY

CROP CALENDARS PLOTTED 01/08/78
PERCENT OF AREA IN DEVELOPMENT STAGE BY SPECIFIED DATE FOR
MINNESOTA AND 10 ESTIMATED AVERAGE CROP CALENDARS FROM BULLETIN 283

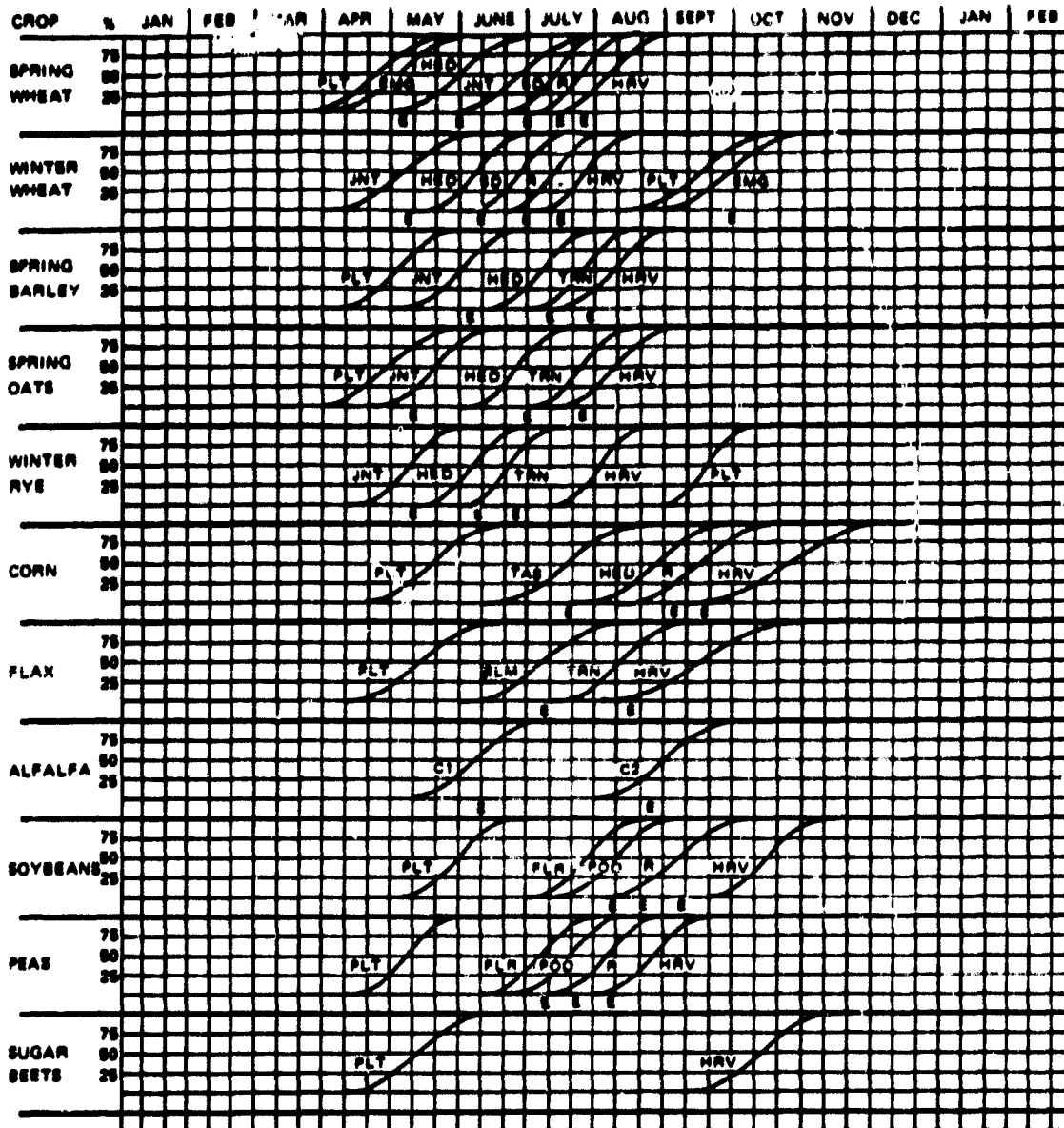


LEGEND

E Under stage name, indicates rough estimate of date
EMG Emergence
HED Heading
HRV Harvest
JNT Jointing
PLT Planting
R Ripe
SD Soft dough
TRN Turning
C Cut
FLR Flowering

ORIGINAL PAGE IS
OF POOR QUALITY

CROP CALENDARS PLOTTED 01/08/78
PERCENT OF AREA IN DEVELOPMENT STAGE BY SPECIFIED DATE FOR
MINNESOTA CRD 40 ESTIMATED AVERAGE CROP CALENDARS FROM BULLETIN 283

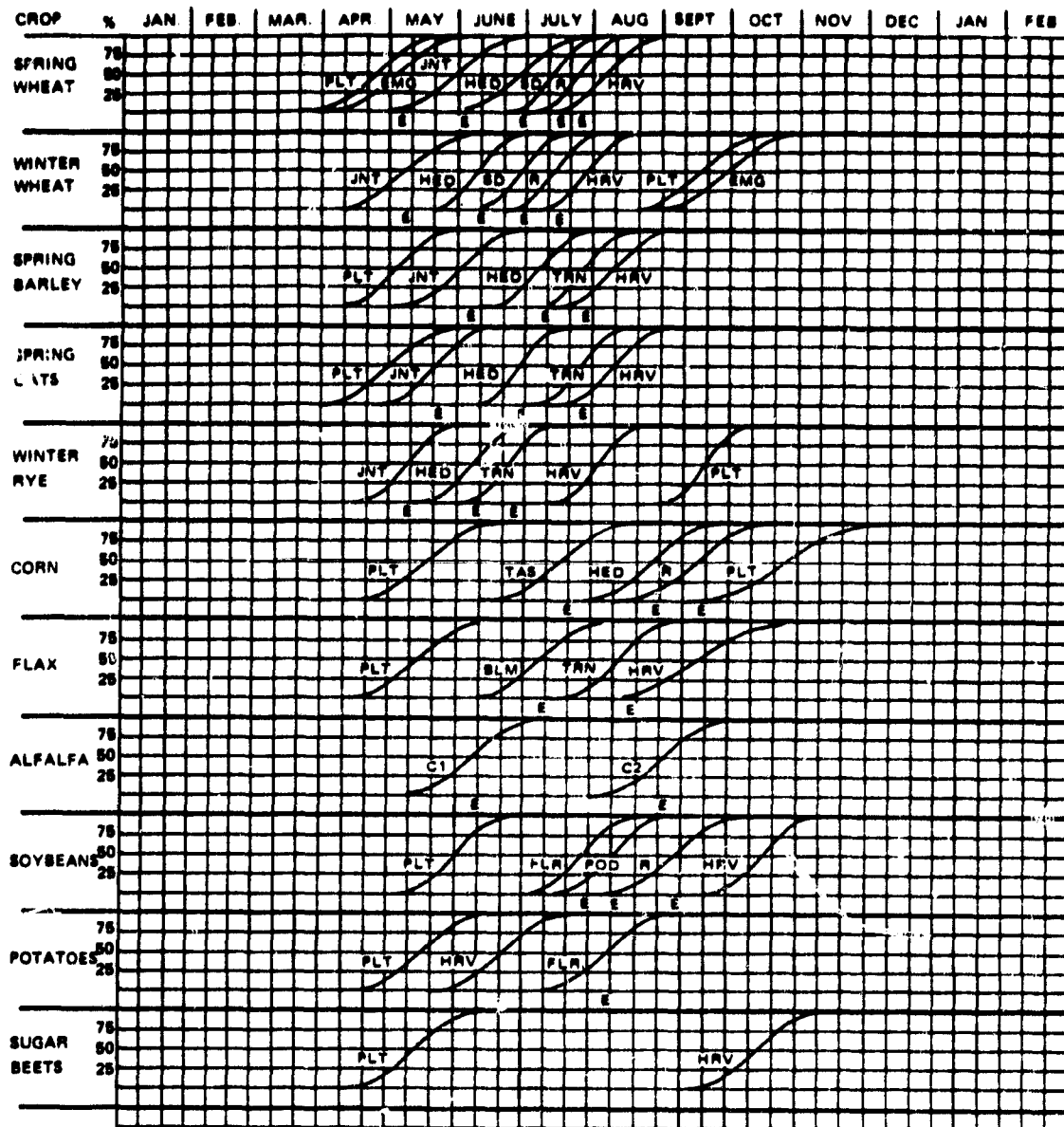


LEGEND

E Under stage name, indicates rough estimate of date
EMG Emergence
HED Heading
HRV Harvest
JNT Jointing
PLT Planting
R Ripe
SD Soft dough
TRN Turning
FLR Flowering
TAS Tasseling
BLM Blooming
C Cut

ORIGINAL PAGE IS
OF POOR QUALITY

CROP CALENDARS PLOTTED 01/06/78
PERCENT OF AREA IN DEVELOPMENT STAGE BY SPECIFIED DATE FOR
MINNESOTA CRD 50 ESTIMATED AVERAGE CROP CALENDARS FROM BULLETIN 283

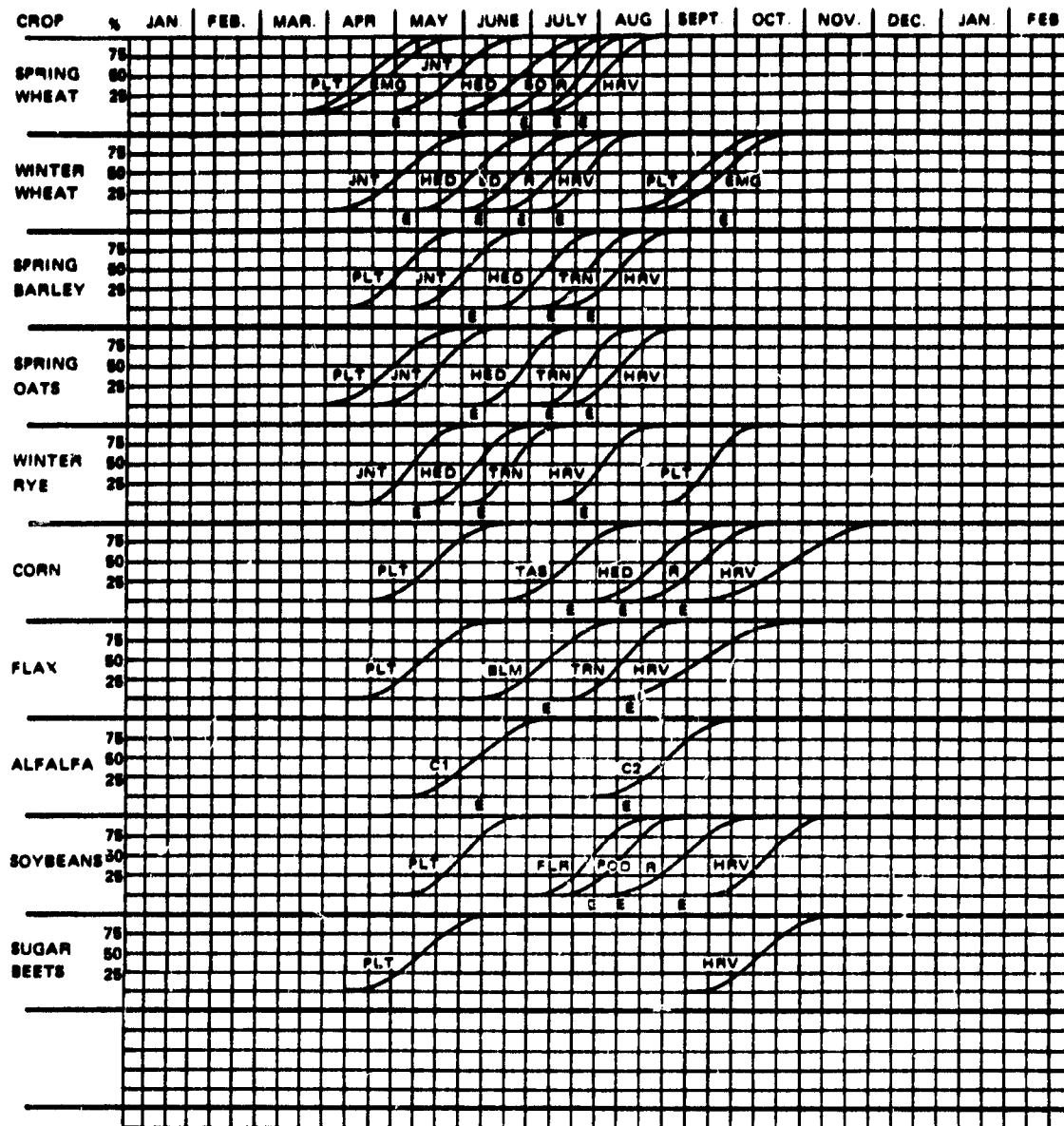


LEGEND

E Under stage name, indicates rough estimate of date
EMG Emergence
HED Heading
HRV Harvest
JNT Jointing
PLT Planting
R Ripe
SD Soft dough
TRN Turning
TAS Tasseling
BLM Blooming
C Cut
FLR Flowering

ORIGINAL PAGE IS OF POOR QUALITY

CROP CALENDARS PLOTTED 01/08/76
PERCENT OF AREA IN DEVELOPMENT STAGE BY SPECIFIED DATE FOR
MINNESOTA CRD 70 ESTIMATED AVERAGE CROP CALENDARS FROM BULLETIN 283

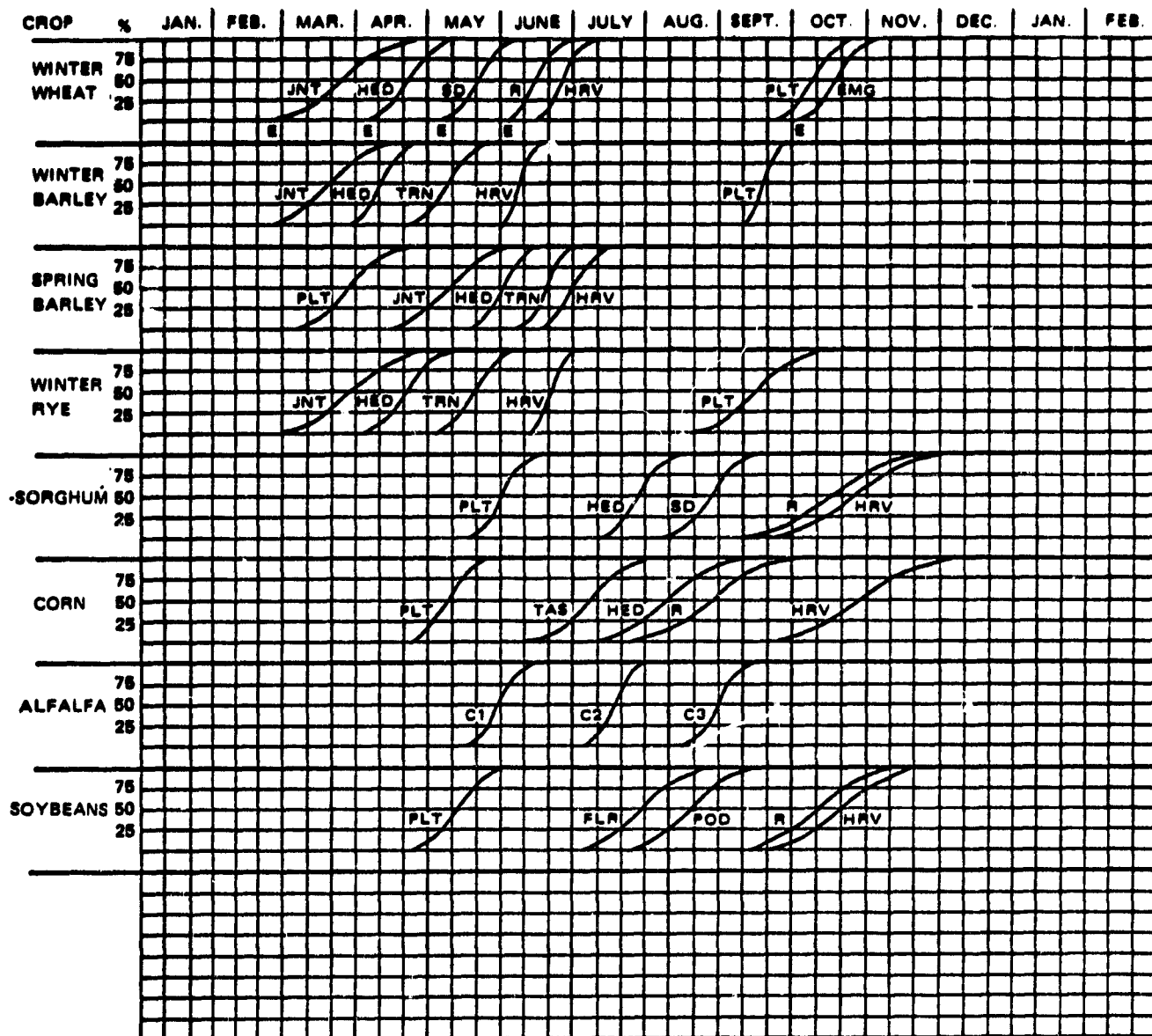


LEGEND

- E Under stage name, indicates rough estimate of date
- EMG Emergence
- HED Heading
- HRV Harvest
- JNT Jointing
- PLT Planting
- R Ripe
- SD Soft dough
- TRN Turning
- TAS Tasseling
- BLM Blooming
- C Cut
- FLR Flowering

ORIGINAL PAGE IS
OF POOR QUALITY

CROP CALENDARS PLOTTED 01/06/78
PERCENT OF AREA IN DEVELOPMENT STAGE BY SPECIFIED DATE FOR
MISSOURI CROPS ESTIMATED AVERAGE CROP CALENDARS FROM USDA BULLETIN 283

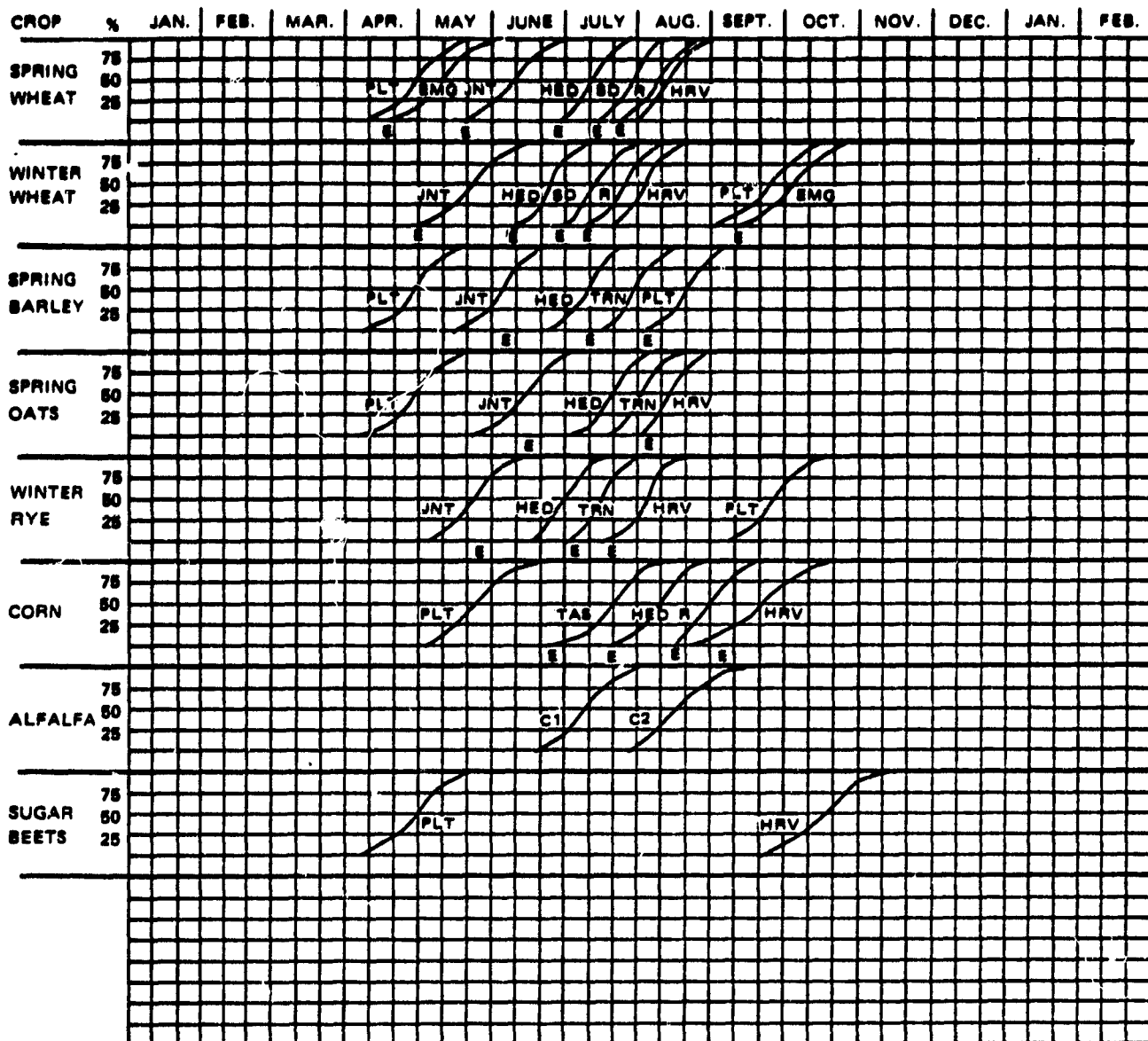


LEGEND

E Under stage name, indicates rough estimate of date
EMG Emergence
HED Heading
HRV Harvest
JNT Jointing
PLT Planting
R Ripe
SD Soft dough
TRN Turning
TAS Tasseling
C Cut
FLR Flowering

ORIGINAL PAGE 10 OF POOR QUALITY

CROP CALENDARS PLOTTED 01/08/76
PERCENT OF AREA IN DEVELOPMENT STAGE BY SPECIFIED DATE FOR
MONTANA CROD 10 RECENT AVERAGE CROP CALENDARS

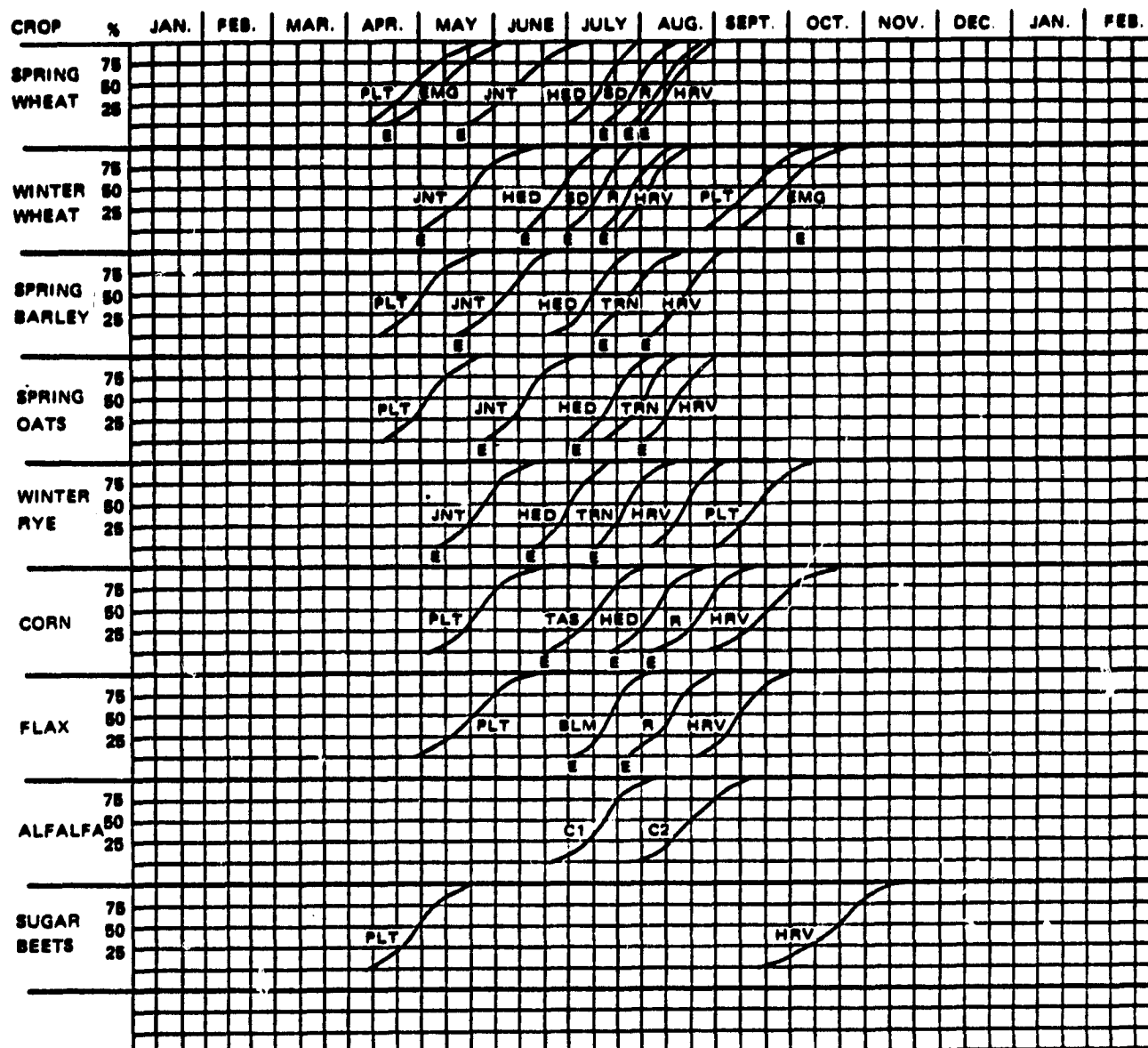


LEGEND

E Under stage name, indicates rough estimate of date
 EMG Emergence
 HED Heading
 HRV Harvest
 JNT Jointing
 PLT Planting
 R Ripe
 SD Soft dough
 TRN Turning
 TAS Tasselling
 C Cut

ORIGINAL PAGE IS OF POOR QUALITY

CROP CALENDARS PLOTTED 01/08/78
PERCENT OF AREA IN DEVELOPMENT STAGE BY SPECIFIED DATE FOR
MONTANA CRO 20 RECENT AVERAGE CROP CALENDARS

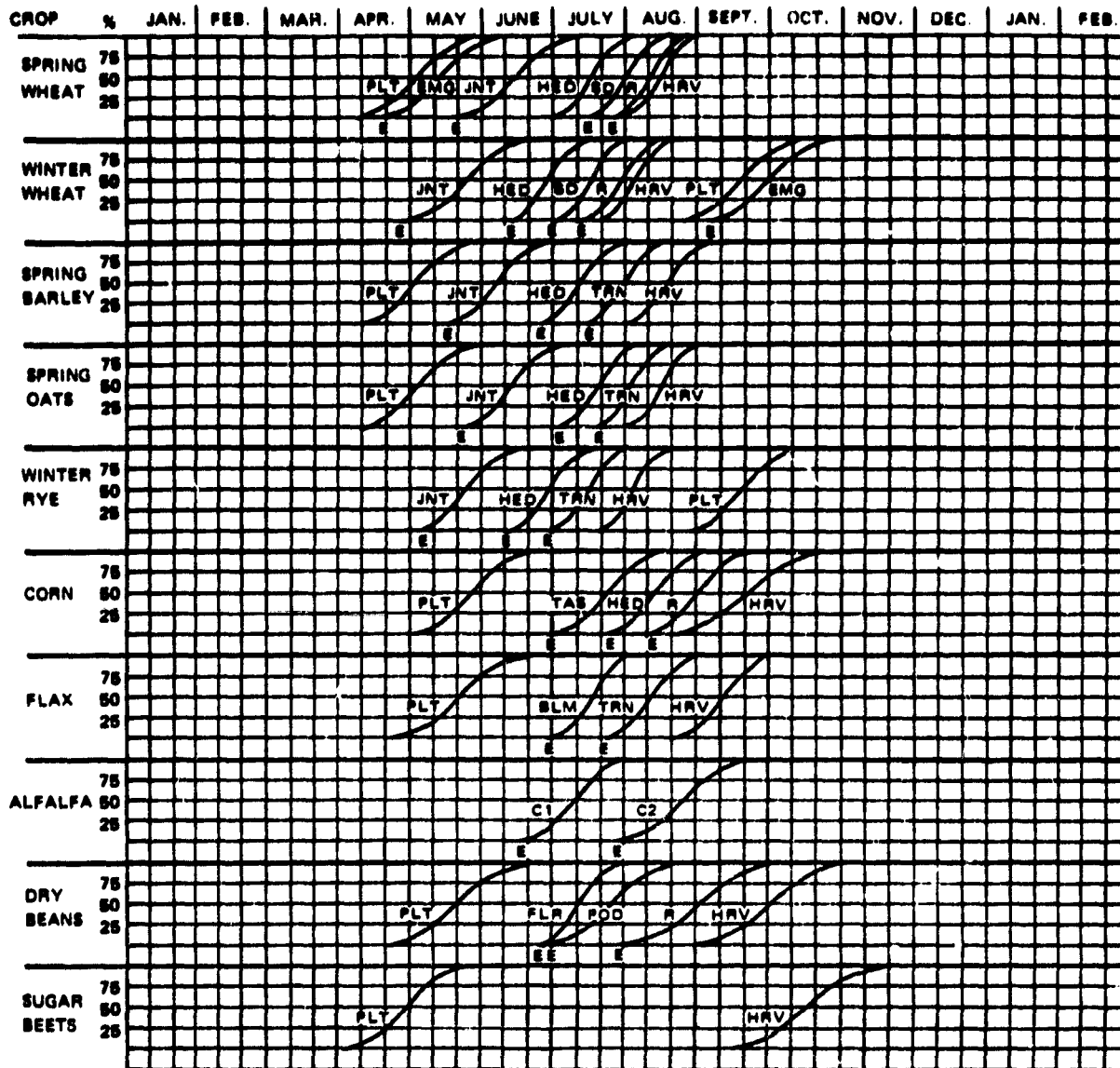


LEGEND

E Under stage name, indicates rough estimate of date
EMG Emergence
HED Heading
HRV Harvest
JNT Jointing
PLT Planting
R Ripe
SD Soft dough
TRN Turning
TAS Tasseling
BLM Blooming
C Cut

ORIGINAL PAGE IS
OF POOR QUALITY

CROP CALENDARS PLOTTED 01/06/76
PERCENT OF AREA IN DEVELOPMENT STAGE BY SPECIFIED DATE FOR
MONTANA CRO 30 RECENT AVERAGE CROP CALENDARS

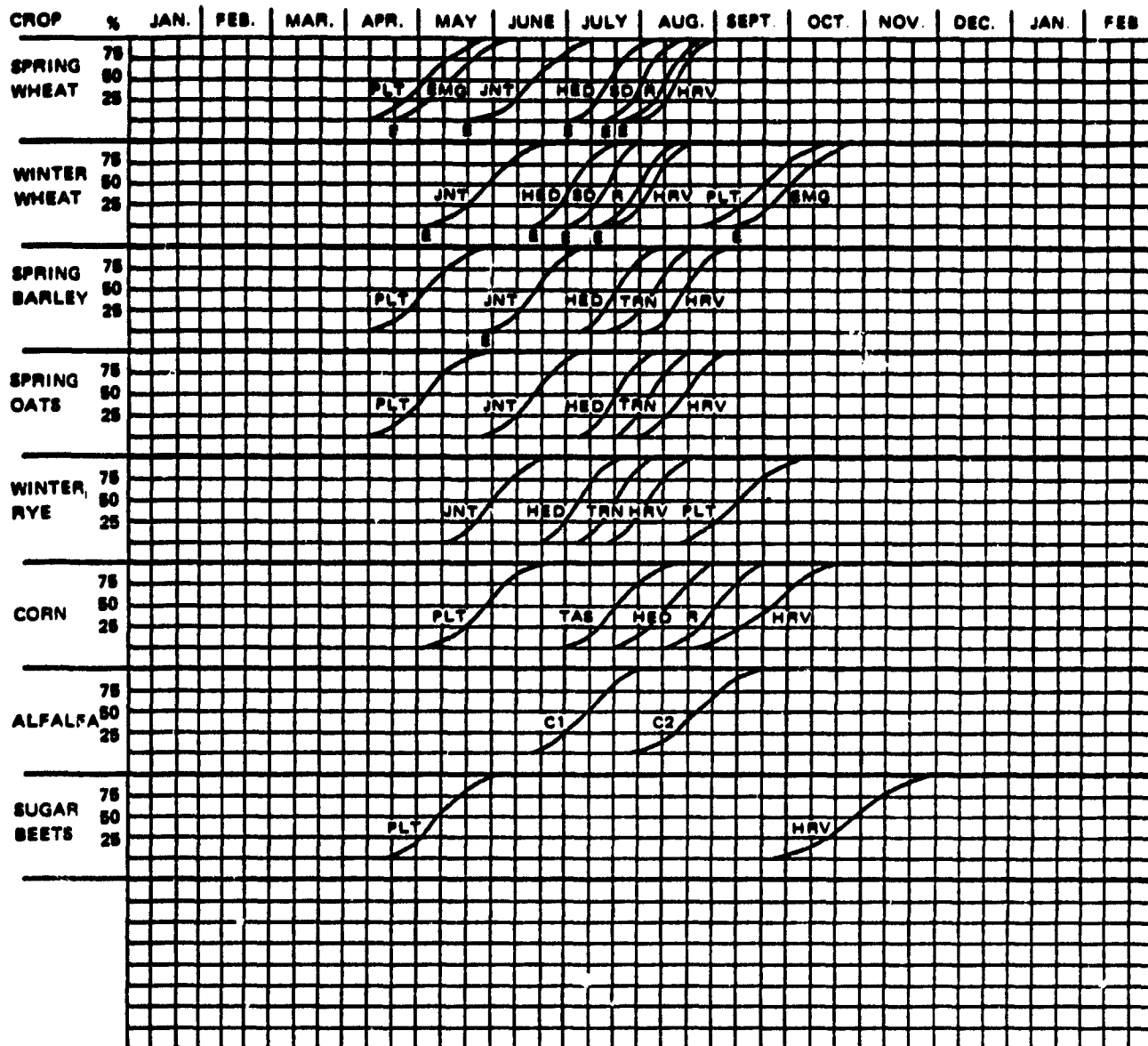


LEGEND

E Under stage name, indicates rough estimate of date
EMG Emergence
HED Heading
HRV Harvest
JNT Jointing
PLT Planting
R Ripe
SD Soft dough
TRN Turning
TAS Tasseling
BLM Blooming
C Cut
FLR Flowering

ORIGINAL PAGE IS
OF POOR QUALITY

CROP CALENDARS PLOTTED 01/08/78
PERCENT OF AREA IN DEVELOPMENT STAGE BY SPECIFIED DATE FOR
MONTANA CROD 60 RECENT AVERAGE CROP CALENDARS

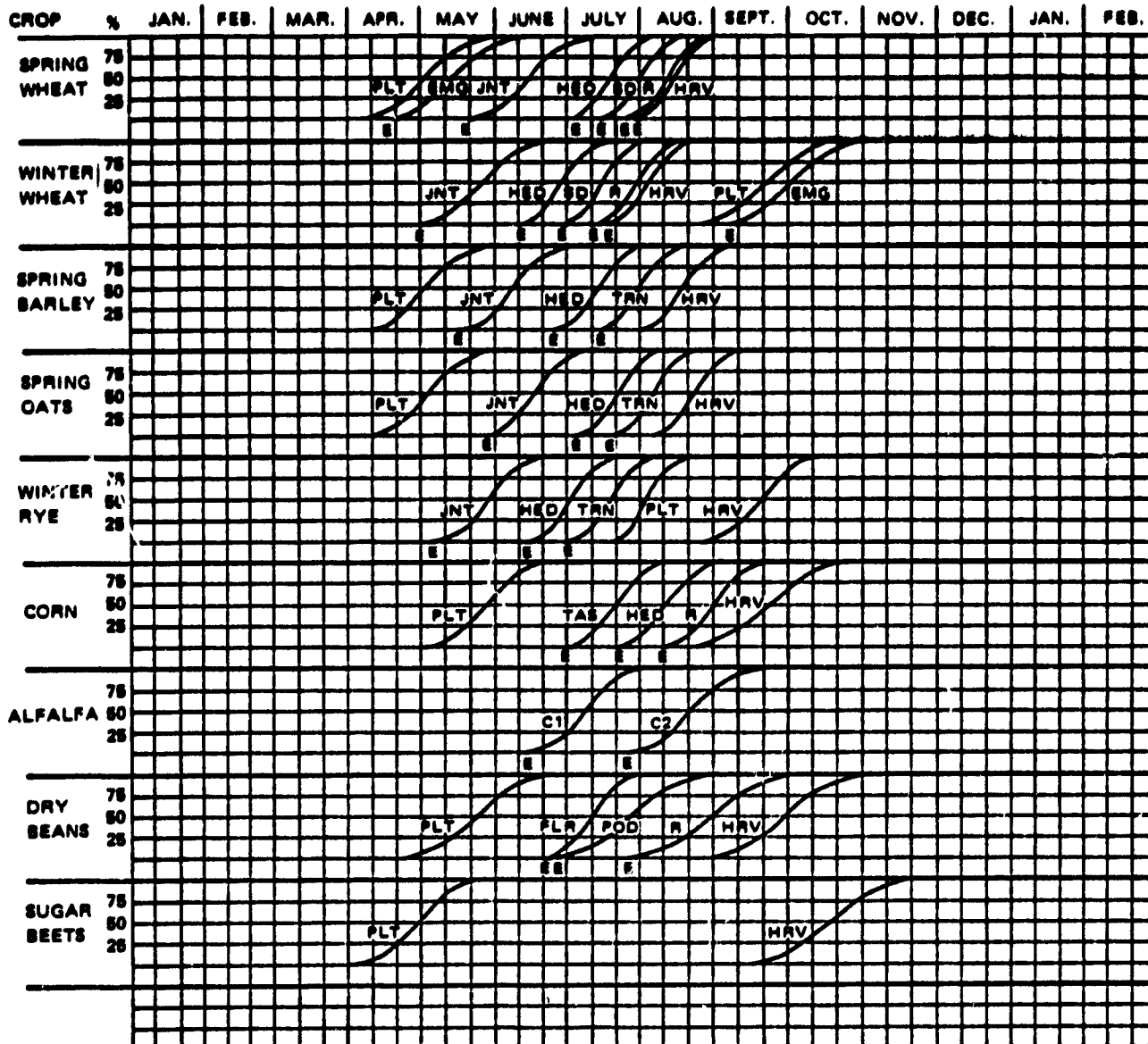


LEGEND

E Under stage name, indicates rough estimate of date
 EMG Emergence
 HED Heading
 HRV Harvest
 JNT Jointing
 PLT Planting
 R Ripe
 SD Soft dough
 TRN Turning
 C Cut
 TAS Tasseling

ORIGINAL PAGE IS
OF POOR QUALITY

CROP CALENDARS PLOTTED 01/08/78
PERCENT OF AREA IN DEVELOPMENT STAGE BY SPECIFIED DATE FOR
MONTANA CRO 70 RECENT AVERAGE CROP CALENDARS

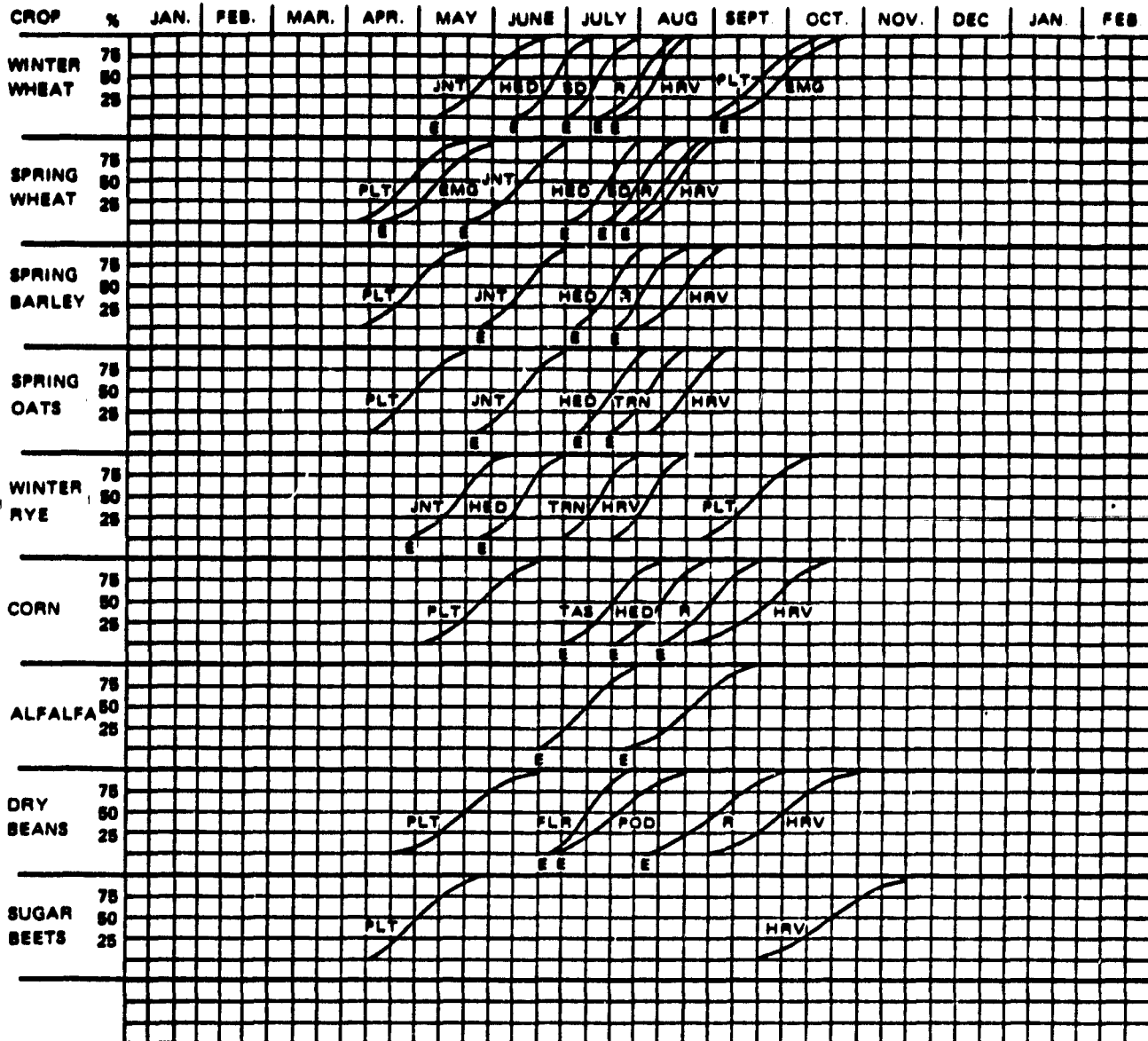


LEGEND

E Under stage name, indicates rough estimate of date
 EMG Emergence
 HED Heading
 HRV Harvest
 JNT Jointing
 PLT Planting
 R Ripe
 SD Soft dough
 TRN Turning
 TAS Tasselling
 C Cut
 FLR Flowering

ORIGINAL PAGE IS
OF POOR QUALITY

CROP CALENDARS PLOTTED 9/1/68/76
PERCENT OF AREA IN DEVELOPMENT STAGE BY SPECIFIED DATE FOR
MONTANA CRO 80 RECENT AVERAGE CROP CALENDARS

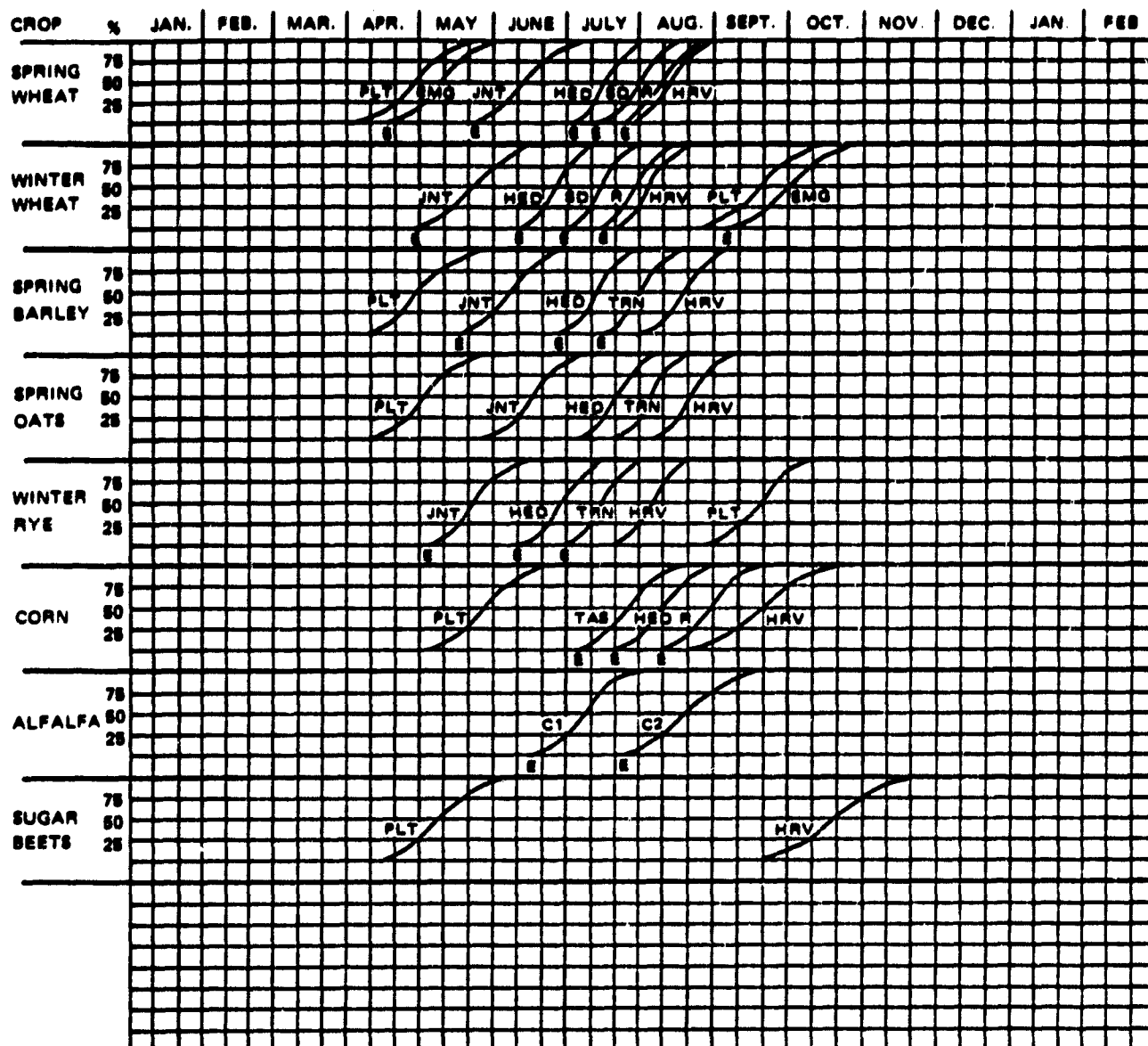


LEGEND

E Under stage name, indicates rough estimate of date
 EMG Emergence
 HED Heading
 HRV Harvest
 JNT Jointing
 PLT Planting
 R Ripe
 SD Soft dough
 TRN Turning
 C Cut
 TAS Tasseling

ORIGINAL PAGE IS
OF POOR QUALITY

CROP CALENDARS PLOTTED 01/06/76
PERCENT OF AREA IN DEVELOPMENT STAGE BY SPECIFIED DATE FOR
MONTANA CROD 90 RECENT AVERAGE CROP CALENDARS

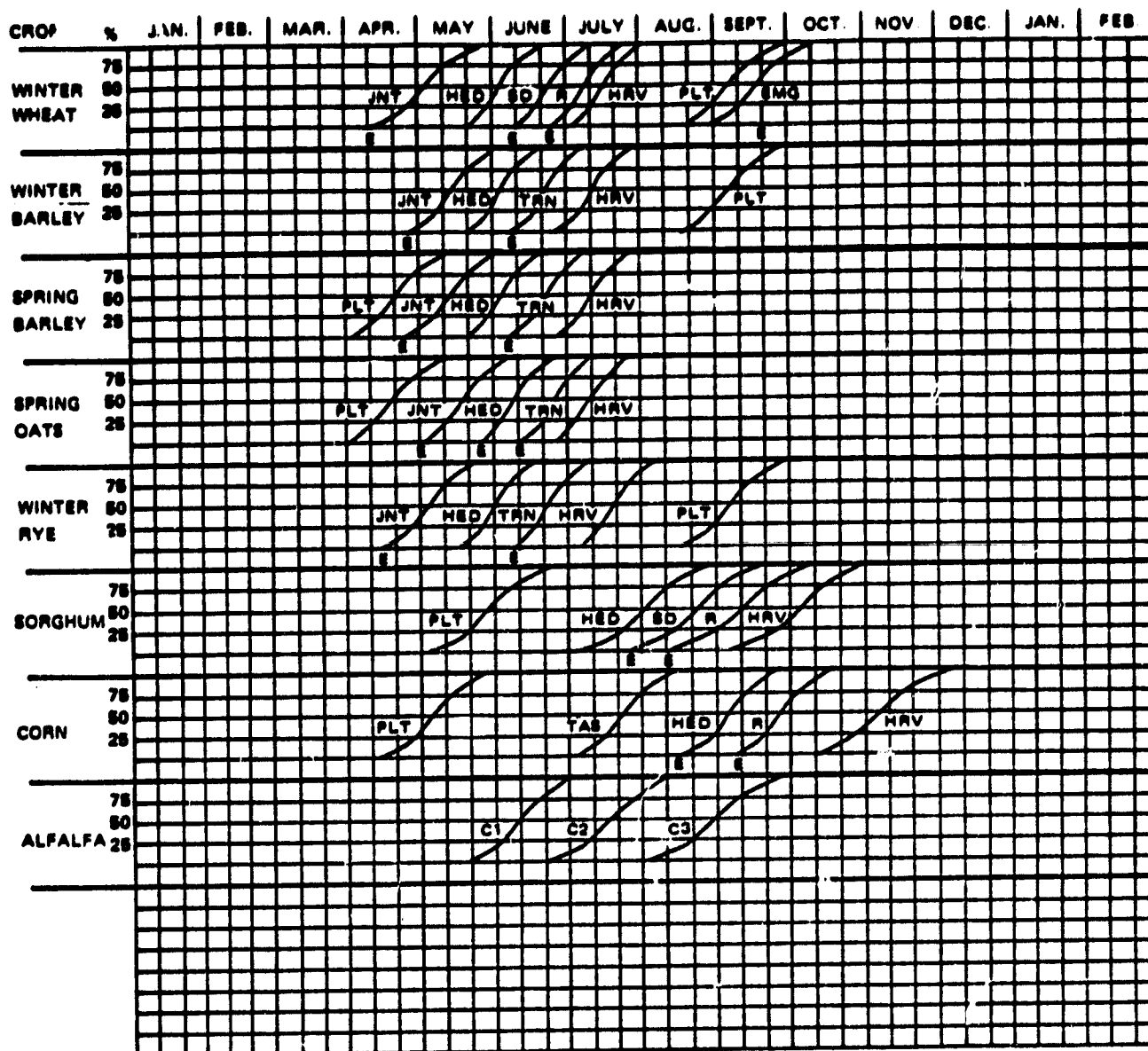


LEGEND

E Under stage name, indicates rough estimate of date
EMG Emergence
HED Heading
HRV Harvest
JNT Jointing
PLT Planting
R Ripe
SD Soft dough
TRN Turning
TAS Tasseling
C Cut

ORIGINAL PAGE IS
OF POOR QUALITY

CROP CALENDARS PLOTTED 01/08/78
PERCENT OF AREA IN DEVELOPMENT STAGE BY SPECIFIED DATE FOR
NEBRASKA CRD 10 AVERAGE CROP CALENDARS ENDING IN 1967

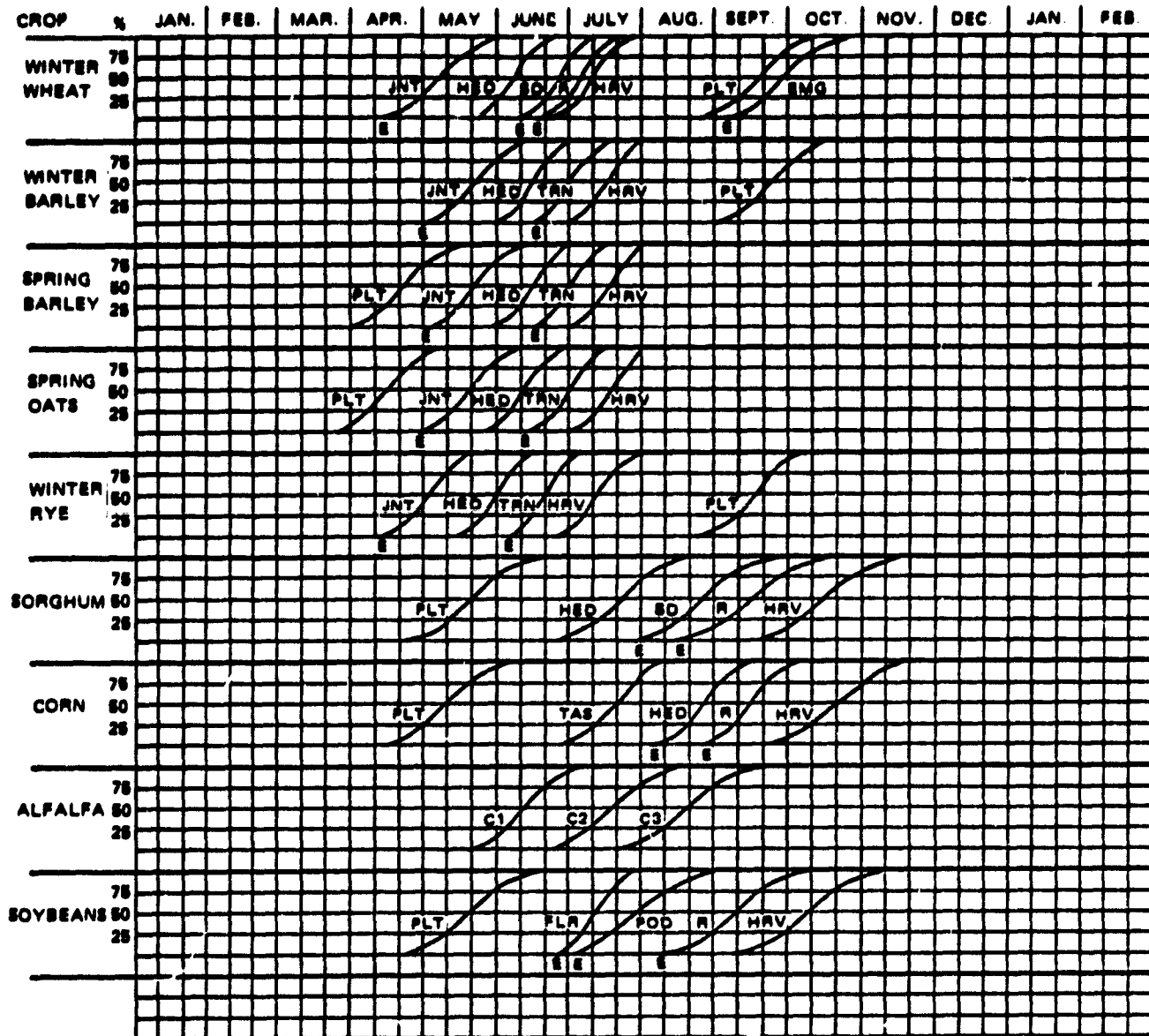


LEGEND

E Under stage name, indicates rough estimate of date
EMG Emergence
HED Heading
HRV Harvest
JNT Jointing
PLT Planting
R Ripe
SD Soft dough
TRN Turning
TAS Tasseling
C Cut

ORIGINAL PAGE IS
OF POOR QUALITY

CROP CALENDARS PLOTTED 01/08/78
PERCENT OF AREA IN DEVELOPMENT STAGE BY SPECIFIED DATE FOR
NEBRASKA CRD 50 AVERAGE CROP CALENDARS ENDING IN 1967

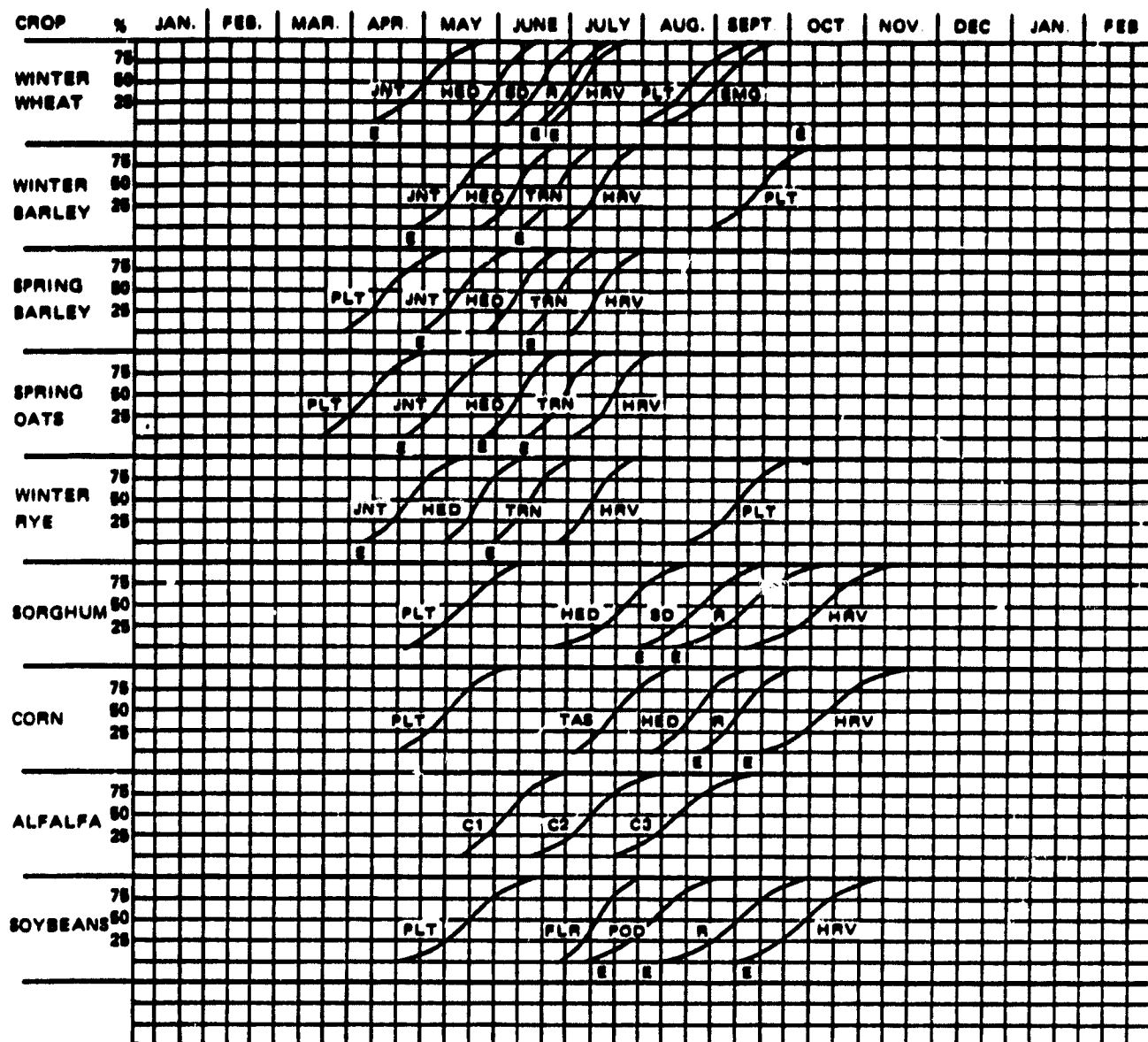


LEGEND

E Under stage name, indicates rough estimate of date
 EMG Emergence
 HED Heading
 HARV Harvest
 JNT Jointing
 PLT Planting
 R Ripe
 SO Soft dough
 TRN Turning
 TAS Tasseling
 C Cut
 FLR Flowering

ORIGINAL PAGE 13
OF POOR QUALITY

CROP CALENDARS PLOTTED 01/06/78
PERCENT OF AREA IN DEVELOPMENT STAGE BY SPECIFIED DATE FOR
NEBRASKA CRD 60 AVERAGE CROP CALENDARS ENDING IN 1967

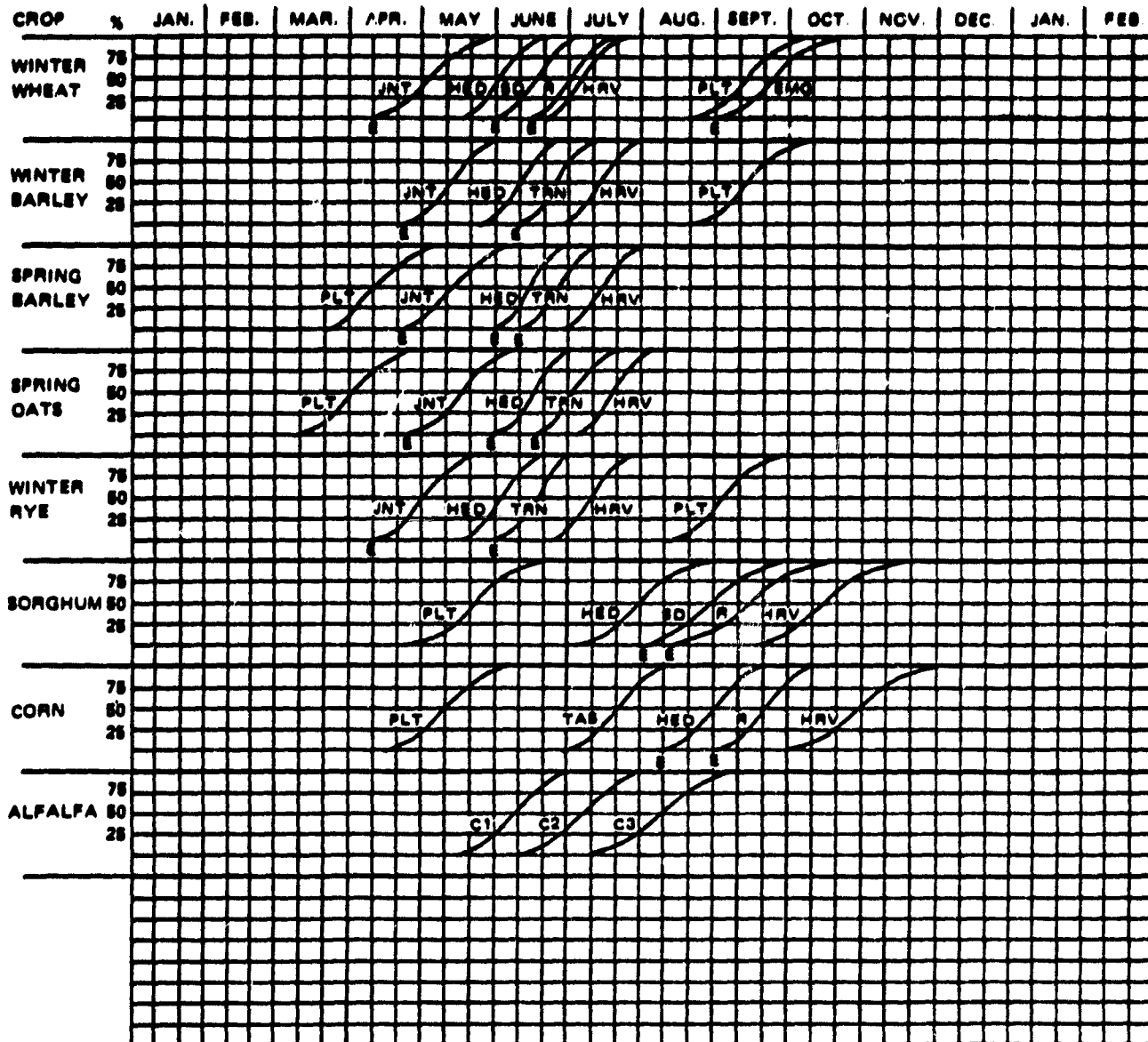


LEGEND

E Under stage name, indicates rough estimate of date
EMG Emergence
HED Heading
HRV Harvest
JNT Jointing
PLT Planting
R Ripe
SD Soft dough
TRN Turning

ORIGINAL PAGE IS
OF POOR QUALITY

CROP CALENDARS PLOTTED 01/08/76
PERCENT OF AREA IN DEVELOPMENT STAGE BY SPECIFIED DATE FOR
NEBRASKA CRD 70 AVERAGE CROP CALENDARS ENDING IN 1967

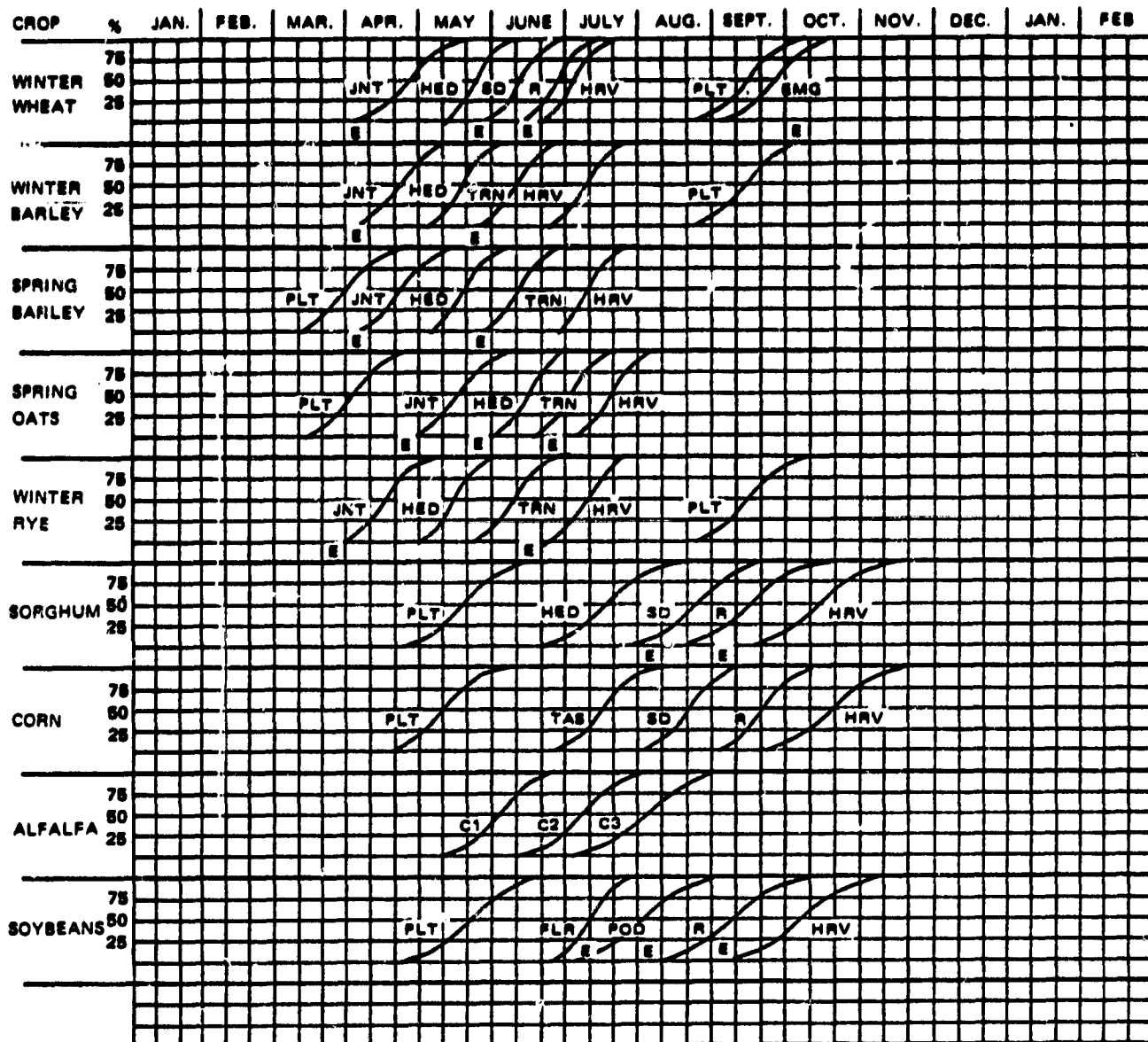


LEGEND

E Under stage name, indicates rough estimate of date
 EMG Emergence
 HED Heading
 HRV Harvest
 JNT Jointing
 PLT Planting
 R Ripe
 SD Soft dough
 TAN Turning
 C Cut
 FLR Flowering

ORIGINAL PAGE IS
OF POOR QUALITY

CROP CALENDARS PLOTTED 6/108/78
PERCENT OF AREA IN DEVELOPMENT STAGE BY SPECIFIED DATE FOR
NEBRASKA CRO 80 AVERAGE CROP CALENDARS ENDING IN 1967

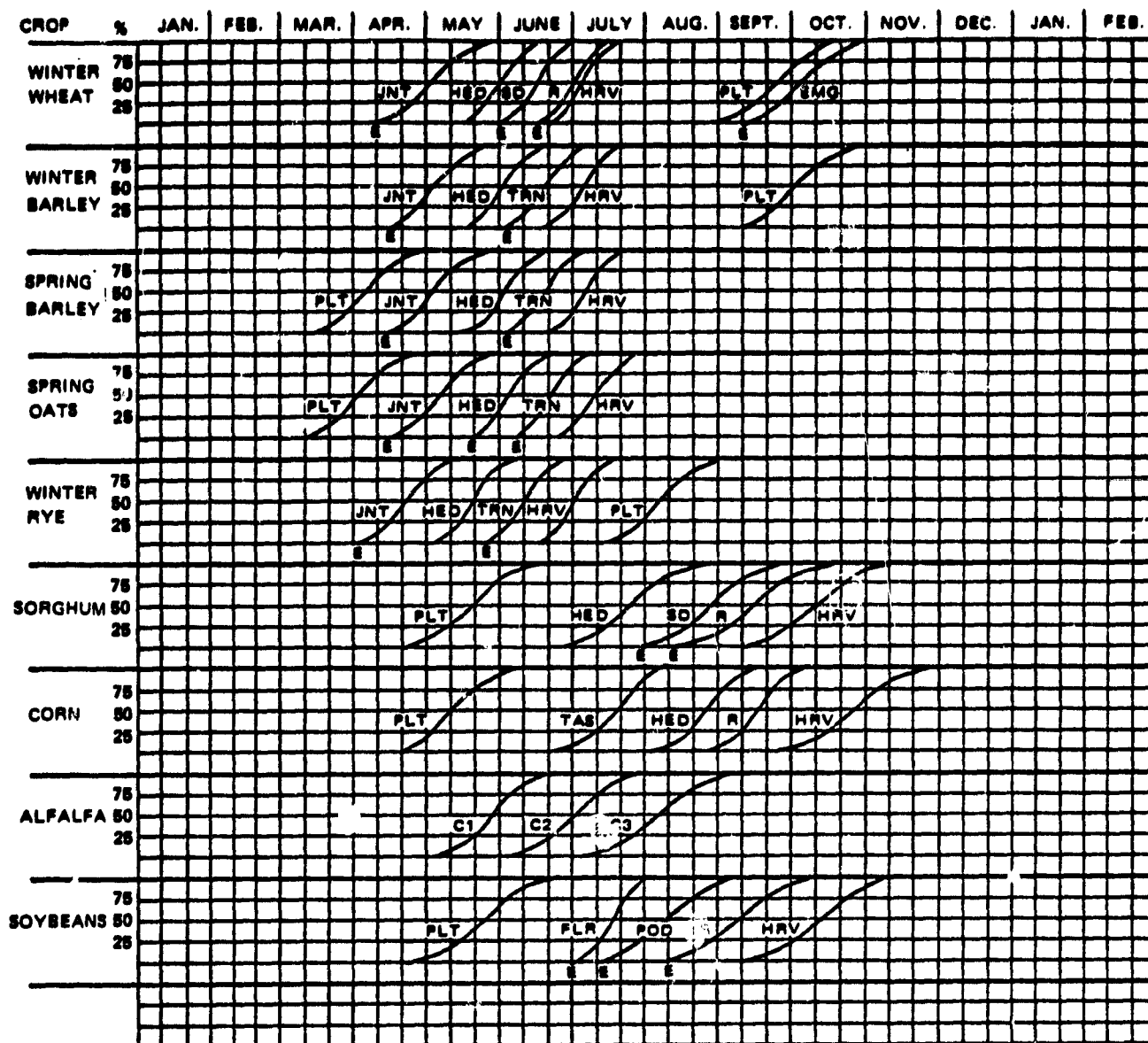


LEGEND

E Under stage name, indicates rough estimate of date
 EMG Emergence
 HED Heading
 HRV Harvest
 JNT Jointing
 PLT Planting
 R Ripe
 SD Soft dough
 TRN Turning
 TAS Tasseling
 C Cut
 FLR Flowering

ORIGINAL PAGE IS
OF POOR QUALITY

CROP CALENDARS PLOTTED 01/06/76
PERCENT OF AREA IN DEVELOPMENT STAGE BY SPECIFIED DATE FOR
NEBRASKA CRD 90 AVERAGE CROP CALENDARS ENDING IN 1967

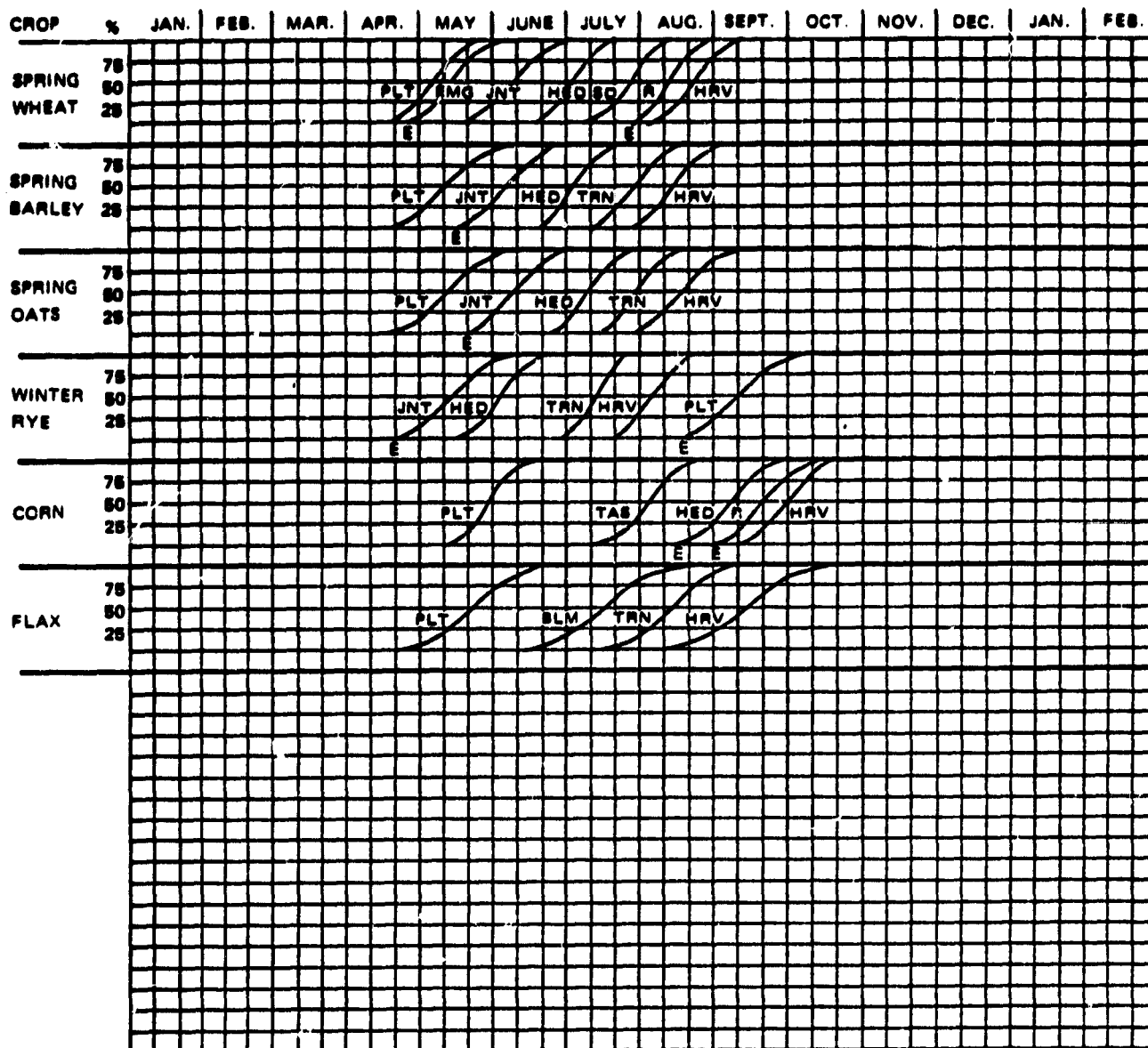


LEGEND

E Under stage name, indicates rough estimate of date
EMG Emergence
HED Heading
HRV Harvest
JNT Jointing
PLT Planting
R Ripe
SD Soft dough
TRN Turning
C Cut
TAS Tasseling
FLR Flowering

ORIGINAL PAGE 13
OF POOR QUALITY

CROP CALENDAR PLOTTED 01/08/76
PERCENT OF AREA IN DEVELOPMENT STAGE BY SPECIFIED DATE FOR
NORTH DAKOTA CRD 10 AVERAGE CROP CALENDARS FROM 1952 TO 1964

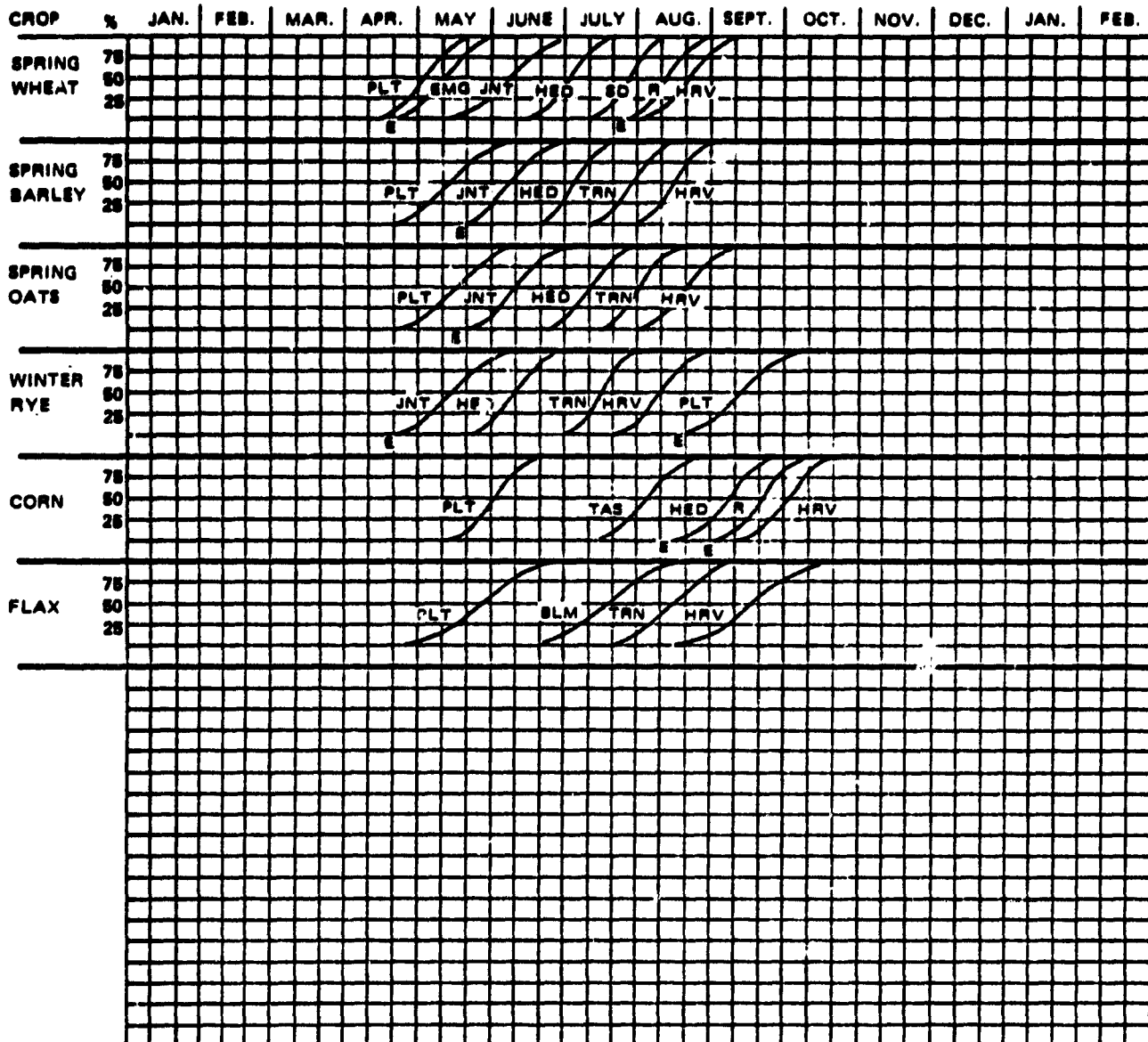


LEGEND

E Under stage name, indicates rough estimate of date
EMG Emergence
HED Heading
HRV Harvest
JNT Jointing
PLT Planting
R Ripe
SD Soft dough
TRN Turning
TAS Tasseling
BLM Blooming

ORIGINAL PAGE IS
OF POOR QUALITY

CROP CALENDARS PLOTTED 01/06/76
PERCENT OF AREA IN DEVELOPMENT STAGE BY SPECIFIED DATE FOR
NORTH DAKOTA CRD 20 AVERAGE CROP CALENDARS FROM 1962 TO 1964

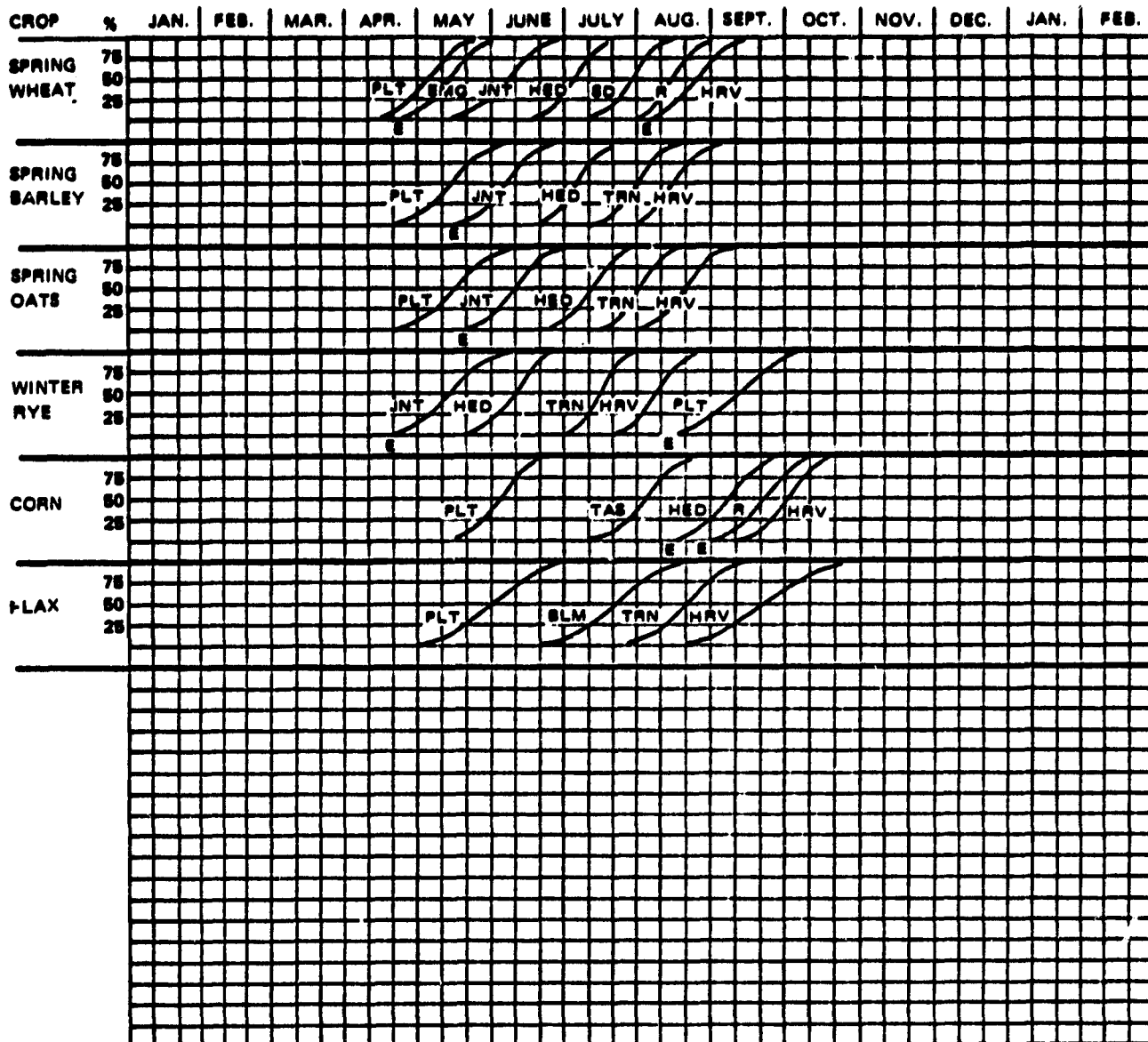


LEGEND

E Under stage name, indicates rough estimate of date
EMG Emergence
HED Heading
HRV Harvest
JNT Jointing
PLT Planting
R Ripe
SD Soft dough
TRN Turning
TAS Tasseling
BLM Blooming

ORIGINAL PAGE IS
OF POOR QUALITY

CROP CALENDARS PLOTTED 01/08/78
PERCENT OF AREA IN DEVELOPMENT STAGE BY SPECIFIED DATE FOR
NORTH DAKOTA CRD 30 AVERAGE CROP CALENDARS FROM 1962 TO 1964

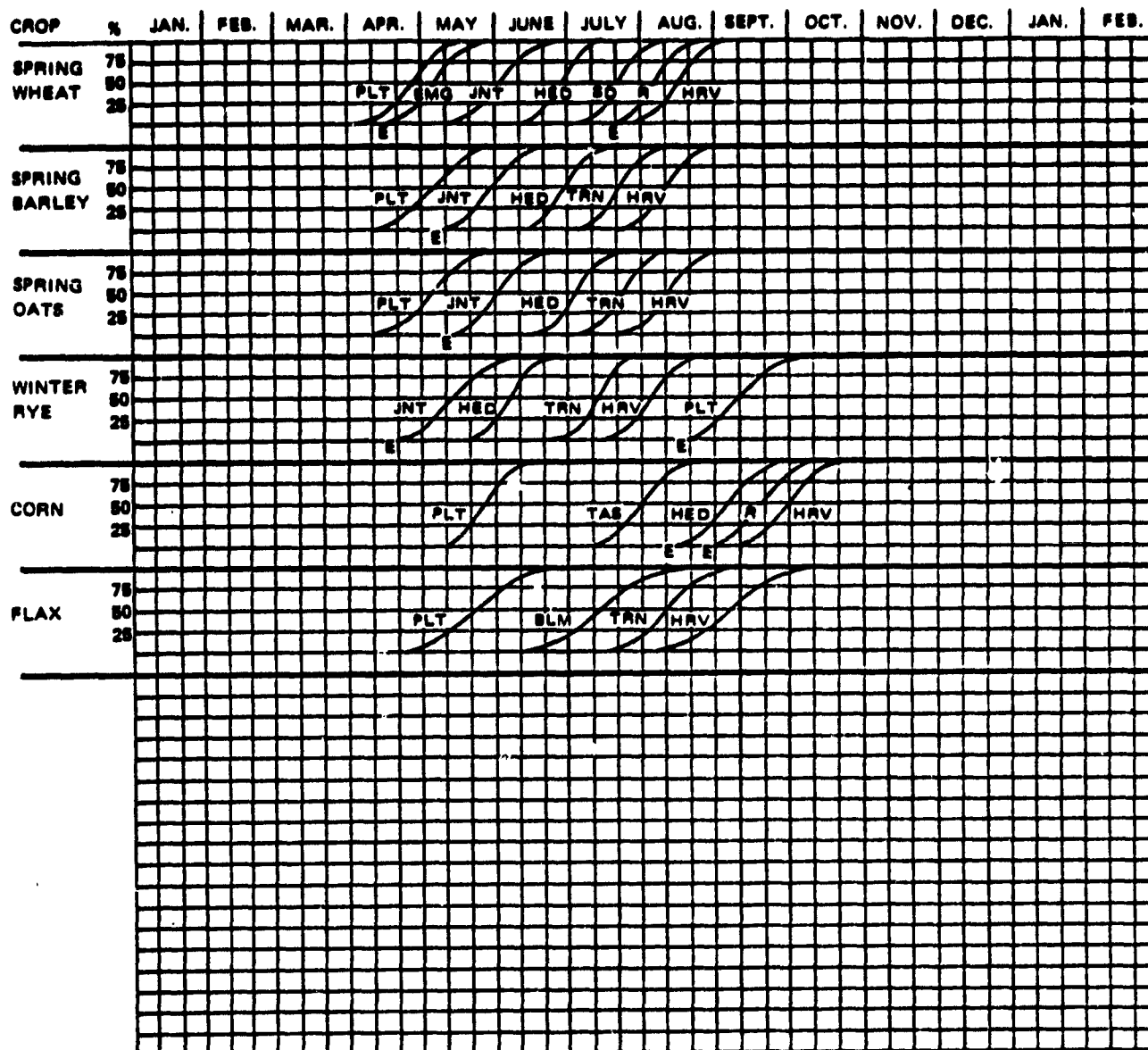


LEGEND

E Under stage name, indicates rough estimate of date
EMG Emergence
HED Heading
HRV Harvest
JNT Jointing
PLT Planting
R Ripe
SD Soft dough
TRN Turning
TAS Tasseling
BLM Blooming

ORIGINAL PAGE IS
OF POOR QUALITY

CROP CALENDARS PLOTTED 01/08/76
PERCENT OF AREA IN DEVELOPMENT STAGE BY SPECIFIED DATE FOR
NORTH DAKOTA CRD 40 AVERAGE CROP CALENDARS FROM 1952 TO 1964

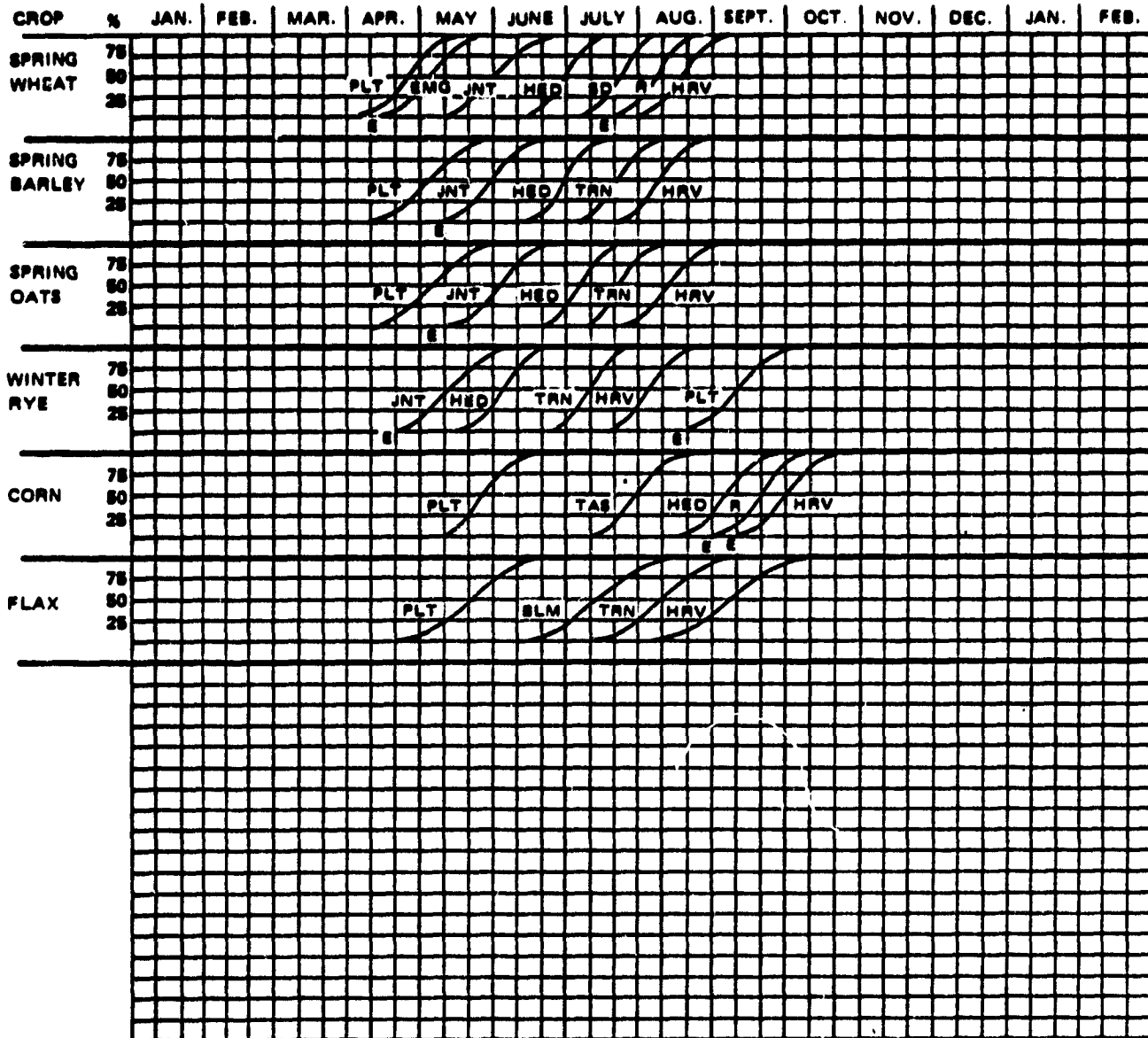


LEGEND

E Under stage name, indicates rough estimate of date
 EMG Emergence
 HED Heading
 HRV Harvest
 JNT Jointing
 PLT Planting
 R Ripe
 SD Soft dough
 TRN Turning
 TAS Tasseling
 BLM Blooming

ORIGINAL PAGE IS
OF POOR QUALITY

CROP CALENDARS PLOTTED 01/06/78
PERCENT OF AREA IN DEVELOPMENT STAGE BY SPECIFIED DATE FOR
NORTH DAKOTA CRD 50 AVERAGE CROP CALENDARS FROM 1952 TO 1964

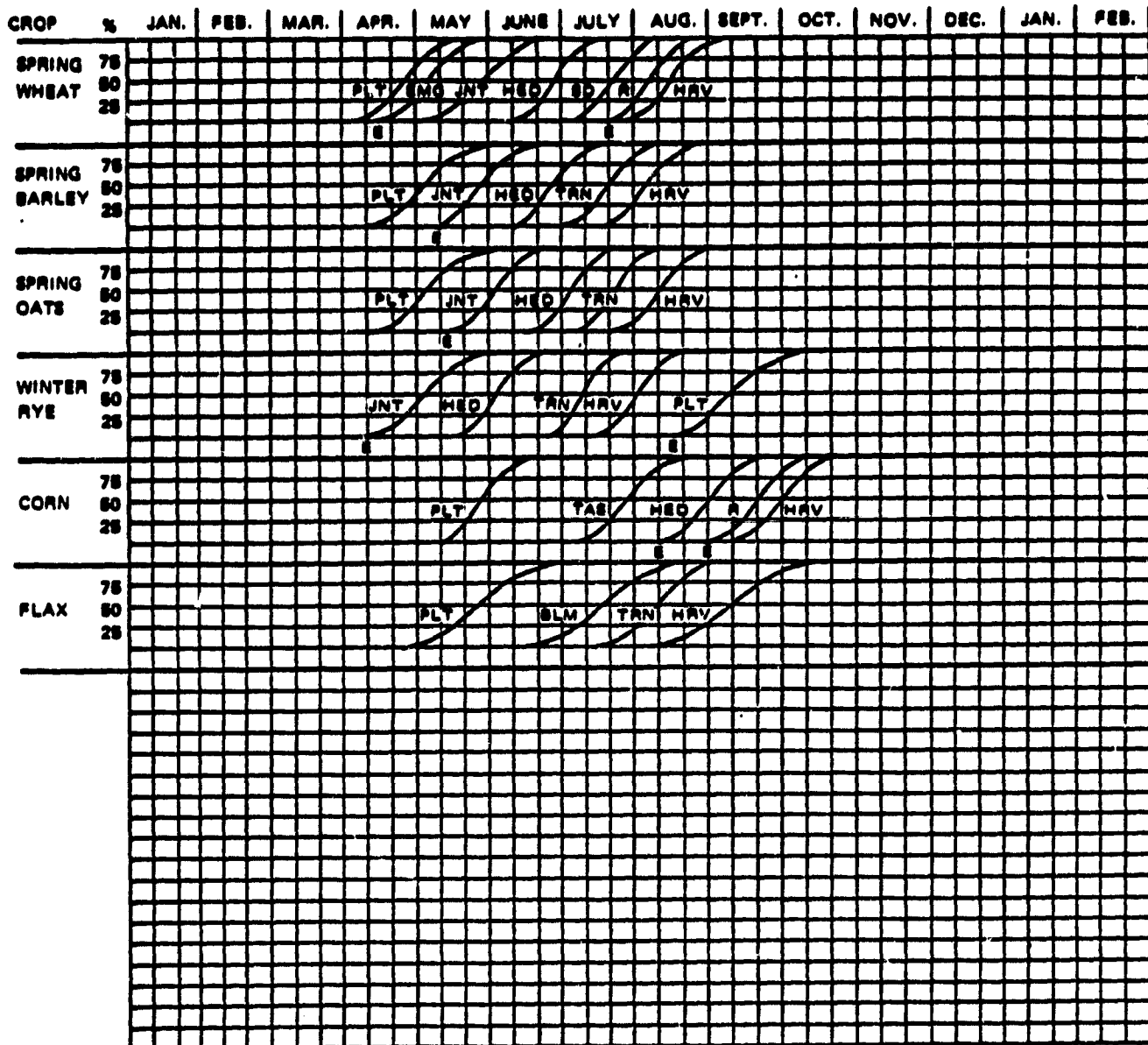


LEGEND

E Under stage name, indicates rough estimate of date
EMG Emergence
HED Heading
HRV Harvest
JNT Jointing
PLT Planting
R Ripe
SD Soft dough
TRN Turning
TAS Tasseling
BLM Blooming

ORIGINAL PAGE IS
OF POOR QUALITY

CROP CALENDARS PLOTTED 01/06/76
PERCENT OF AREA IN DEVELOPMENT STAGE BY SPECIFIED DATE FOR
NORTH DAKOTA CRD 60 AVERAGE CROP CALENDARS FROM 1952 TO 1964

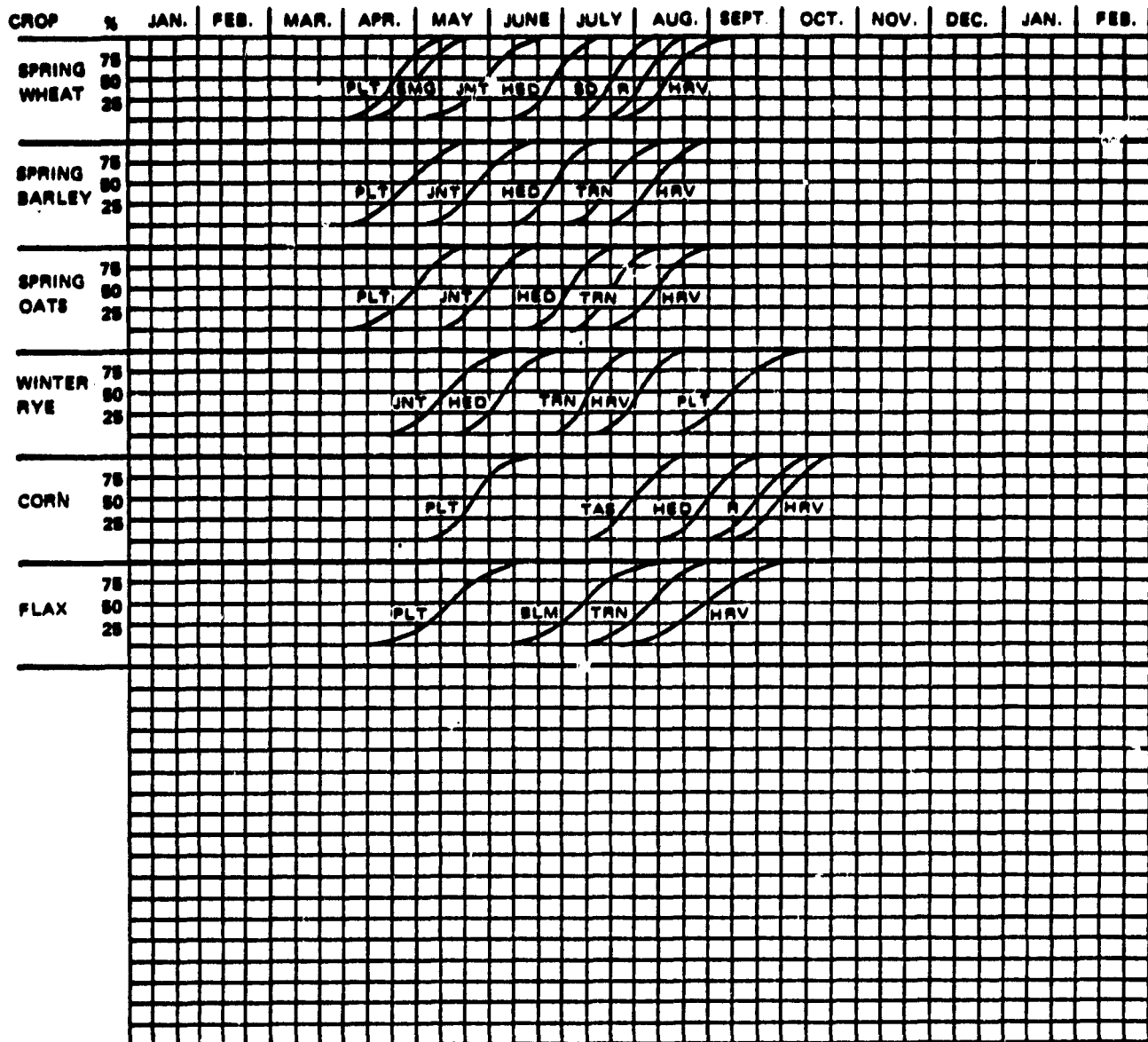


LEGEND

E Under stage name, indicates rough estimate of date
 EMG Emergence
 HED Heading
 HARV Harvest
 JNT Jointing
 PLT Planting
 R Ripe
 SD Soft dough
 TRN Turning
 TAS Tasseling
 BLM Blooming

ORIGINAL PAGE IS
OF POOR QUALITY

CROP CALENDARS PLOTTED 01/06/78
PERCENT OF AREA IN DEVELOPMENT STAGE BY SPECIFIED DATE FOR
NORTH DAKOTA CRD 70 AVERAGE CROP CALENDARS FROM 1952 TO 1964

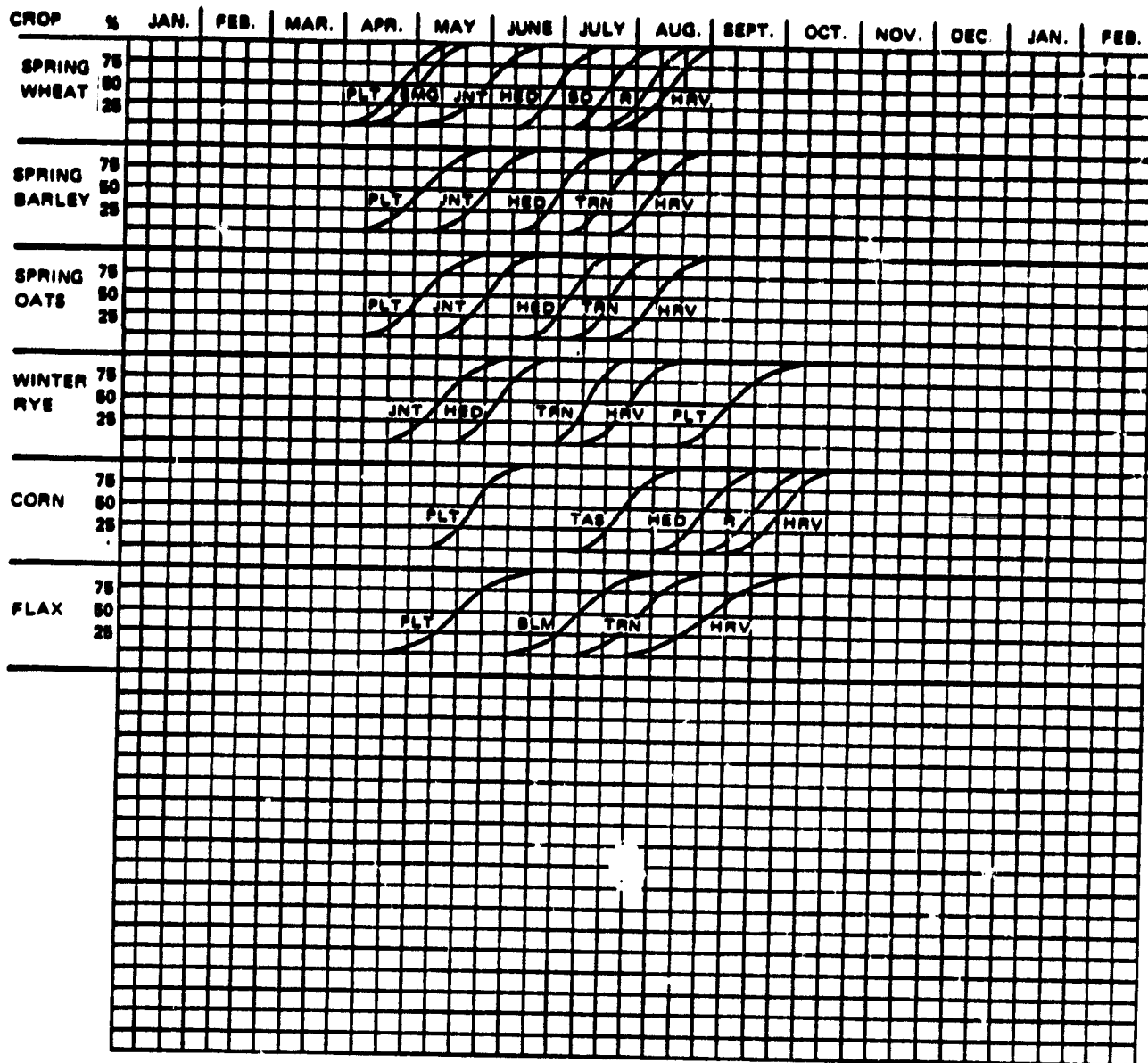


LEGEND

E Under stage name, indicates rough estimate of date
 EMG Emergence
 HED Heading
 HRV Harvest
 JNT Jointing
 PLT Planting
 R Ripe
 SD Soft dough
 TRN Turning
 TAS Tasseling
 BLM Blooming

ORIGINAL PAGE IS
OF POOR QUALITY

CROP CALENDARS PLOTTED 01/06/76
PERCENT OF AREA IN DEVELOPMENT STAGE BY SPECIFIED DATE FOR
NORTH DAKOTA CROPS TO AVERAGE CROP CALENDARS FROM 1962 TO 1964

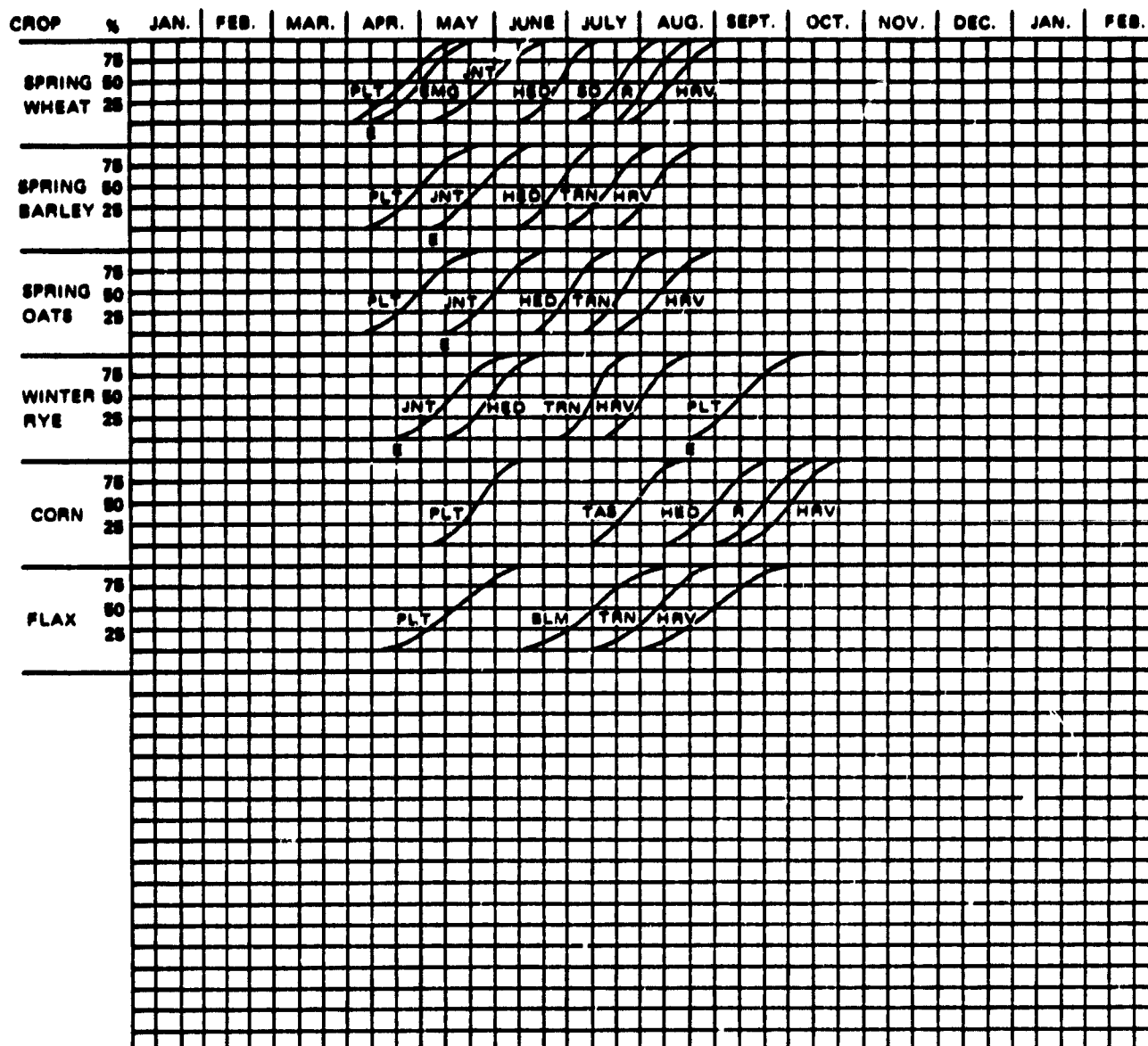


LEGEND

E Under stage name, indicates rough estimate of date
 EMG Emergence
 HED Heading
 HRV Harvest
 JNT Jointing
 PLT Planting
 R Ripe
 SD Soft dough
 TRN Turning
 TAS Tasseling
 BLM Blooming

ORIGINAL PAGE IS
OF POOR QUALITY

CROP CALENDARS PLOTTED 01/08/78
PERCENT OF AREA IN DEVELOPMENT STAGE BY SPECIFIED DATE FOR
NORTH DAKOTA CRD 90 AVERAGE CROP CALENDARS FROM 1952 TO 1964

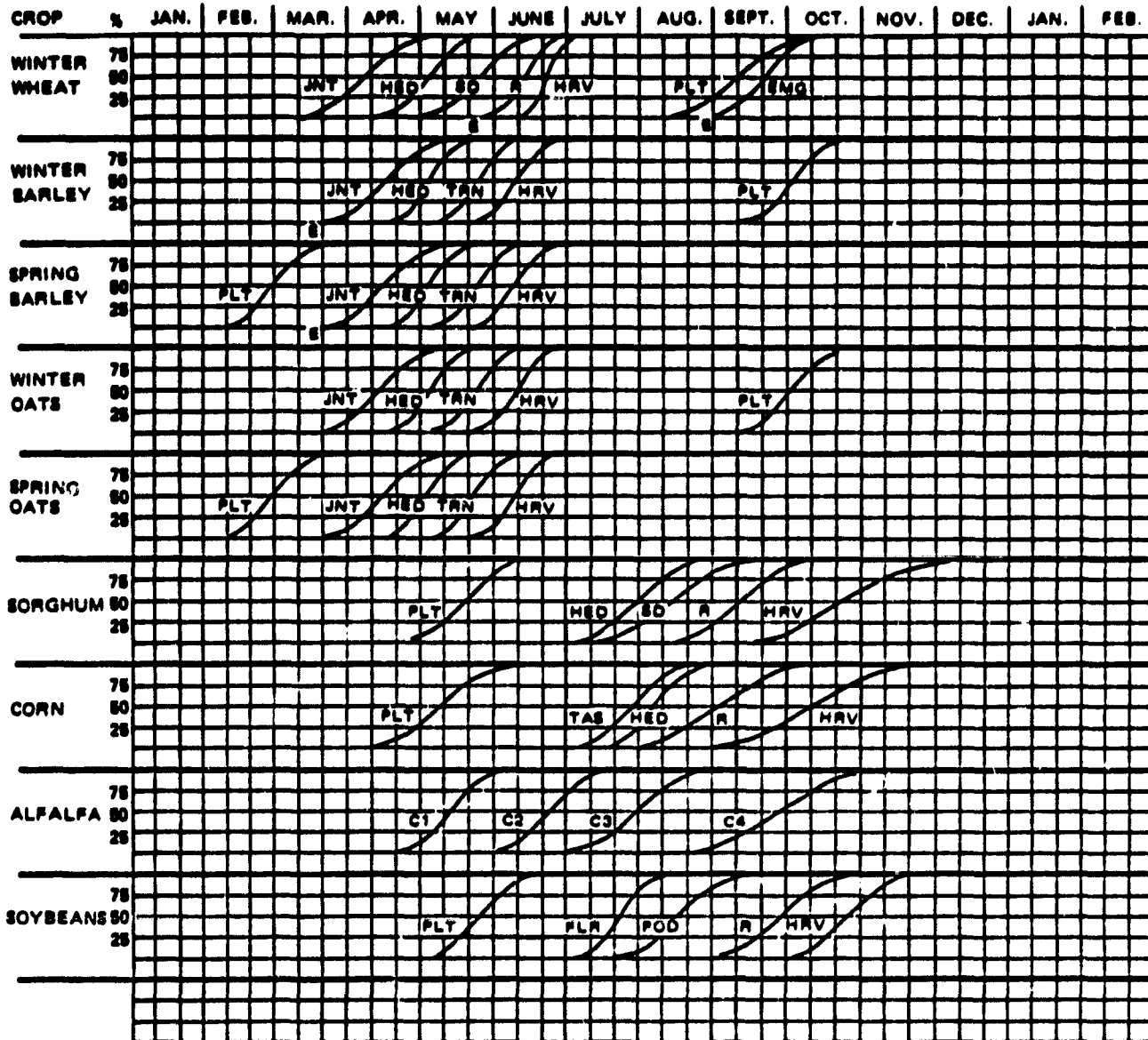


LEGEND

E Under stage name, indicates rough estimate of date
EMG Emergence
HED Heading
HRV Harvest
JNT Jointing
PLT Planting
R Ripe
SD Soft dough
TRN Turning
TAS Tasseling
BLM Blooming

ORIGINAL PAGE IS OF POOR QUALITY

CROP CALENDARS PLOTTED 01/08/76
PERCENT OF AREA IN DEVELOPMENT STAGE BY SPECIFIED DATE FOR
OKLAHOMA CRD 1; AVERAGE CROP CALENDARS FROM 1964 TO 1973

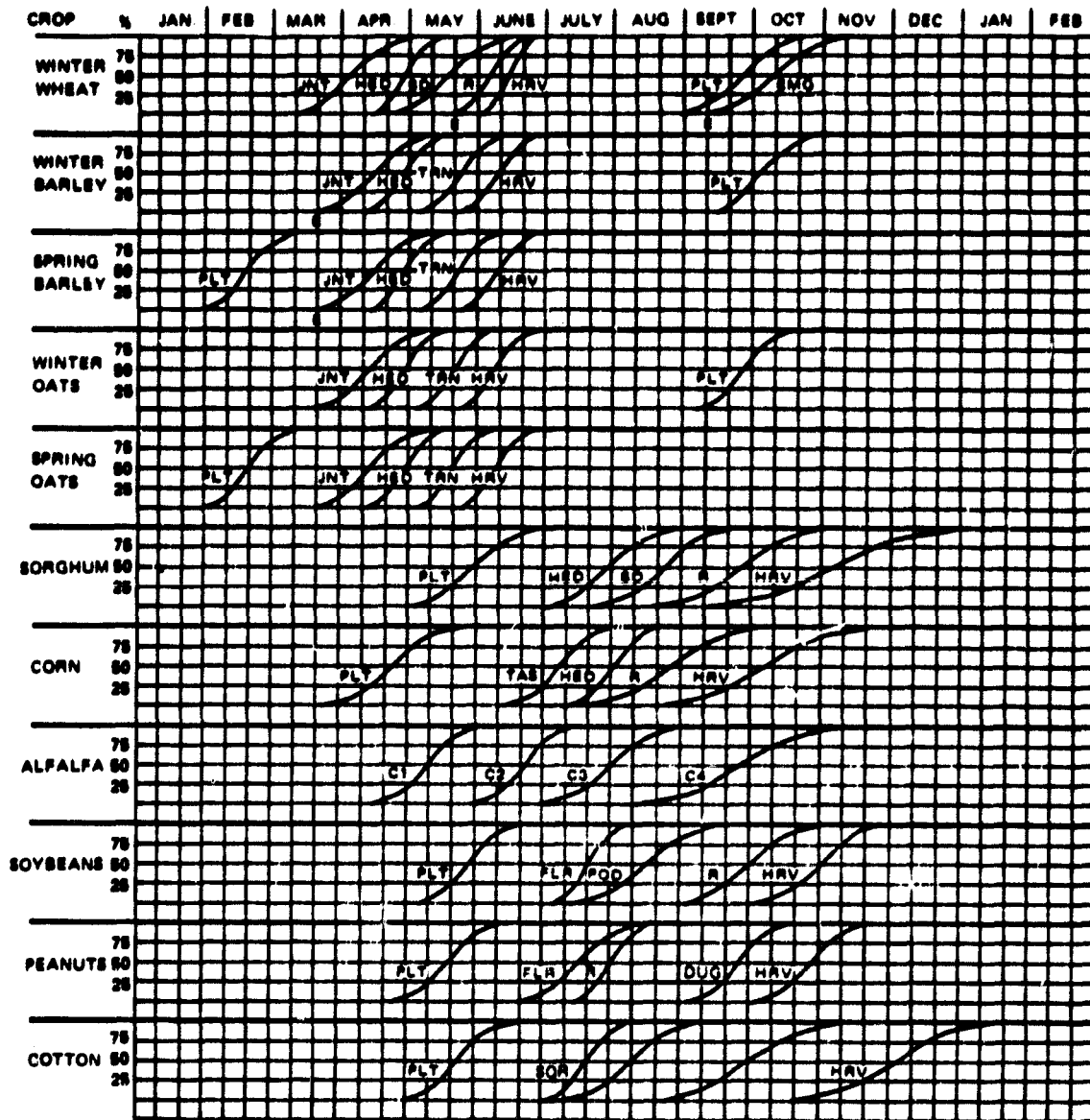


LEGEND

E Under stage name, indicates rough estimate of date
EMG Emergence
HED Heading
HRV Harvest
JNT Jointing
PLT Planting
R Ripe
SD Soft dough
TAN Turning
TAS Tasseling
C Cut
FLR Flowering

ORIGINAL PAGE IS OF POOR QUALITY

CROP CALENDARS PLOTTED 01/06/76
PERCENT OF AREA IN DEVELOPMENT STAGE BY SPECIFIED DATE FOR
OKLAHOMA CRD 24 AVERAGE CROP CALENDARS FROM 1964 TO 1973

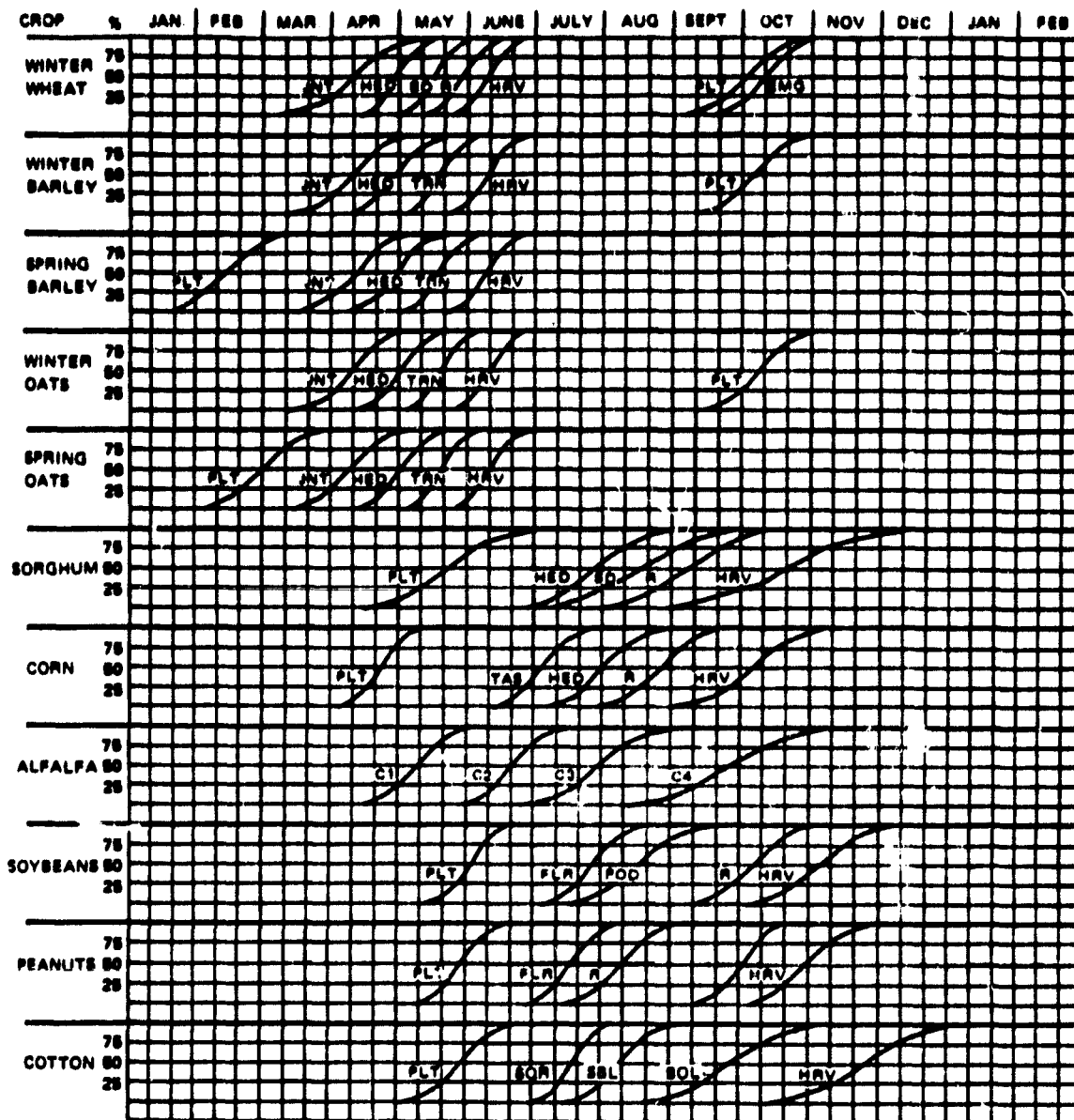


LEGEND

E	Under stage name, indicates rough estimate of date
EMG	Emergence
HED	Heading
HRV	Harvest
JNT	Jointing
PLT	Planting
R	Ripe
SD	Soft dough
TRN	Turning
TAS	Tasseling
FLR	Flowering
SBL	Soft ball
SOL	Bolling
SQR	Squaring

ORIGINAL PAGE IS OF POOR QUALITY

CROP CALENDARS PLOTTED 01/06/76
PERCENT OF AREA IN DEVELOPMENT STAGE BY SPECIFIED DATE FOR
OKLAHOMA CRD 37 AVERAGE CROP CALENDARS FROM 1964 TO 1973

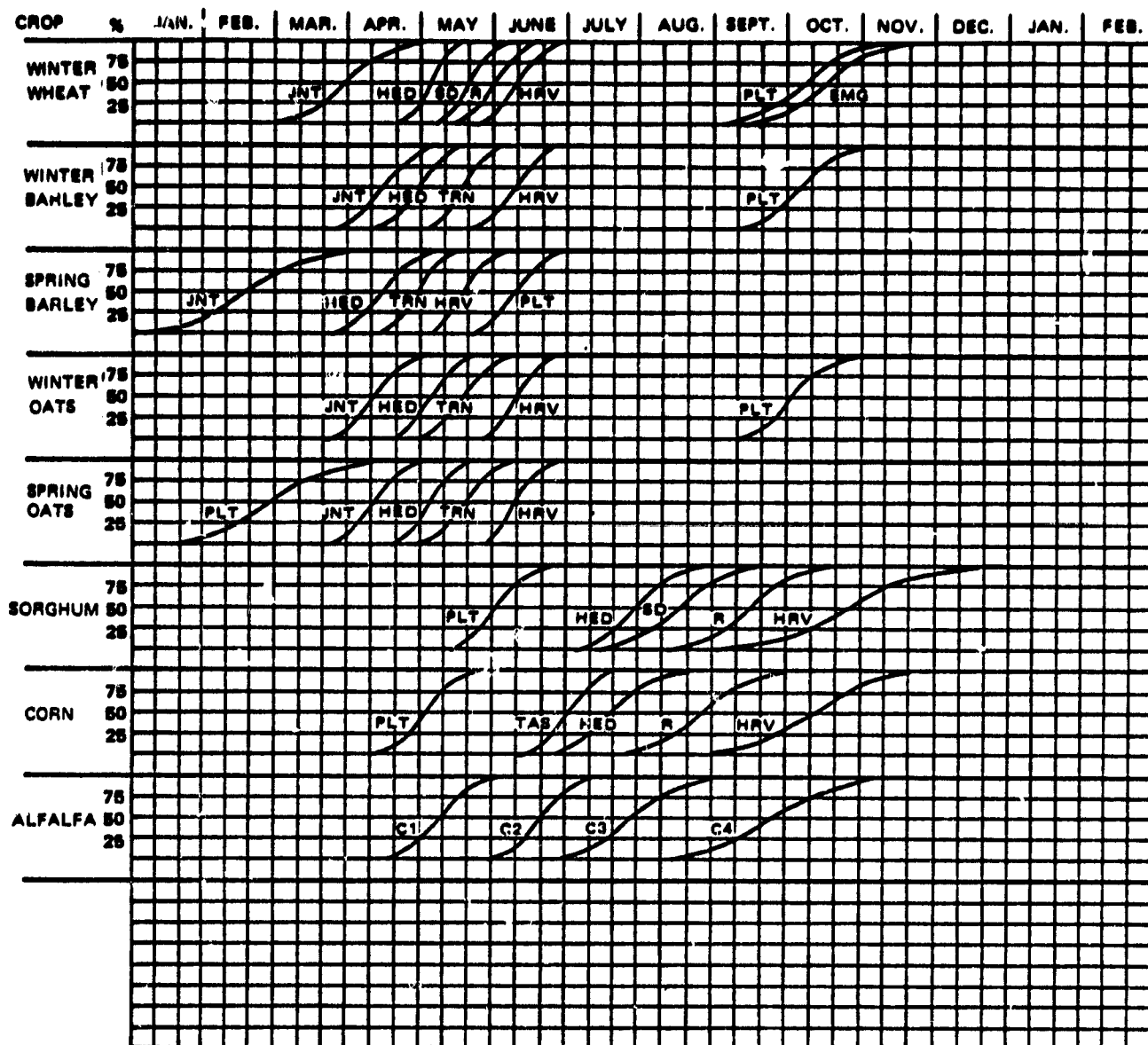


LEGEND

E Under stage name, indicates rough estimate of date
EMG Emergence
HED Heading
HRV Harvest
JNT Jointing
PLT Planting
R Ripe
SD Soft dough
TAL Tasseling
FLR Flowering
SQR Squaring
SBL Soft ball
BOL Bolting

ORIGINAL PAGE IS
OF POOR QUALITY

CROP CALENDARS PLOTTED 01/06/76
PERCENT OF AREA IN DEVELOPMENT STAGE BY SPECIFIED DATE FOR
OKLAHOMA CHL 42 AVERAGE CROP CALENDARS FROM 1964 TO 1973

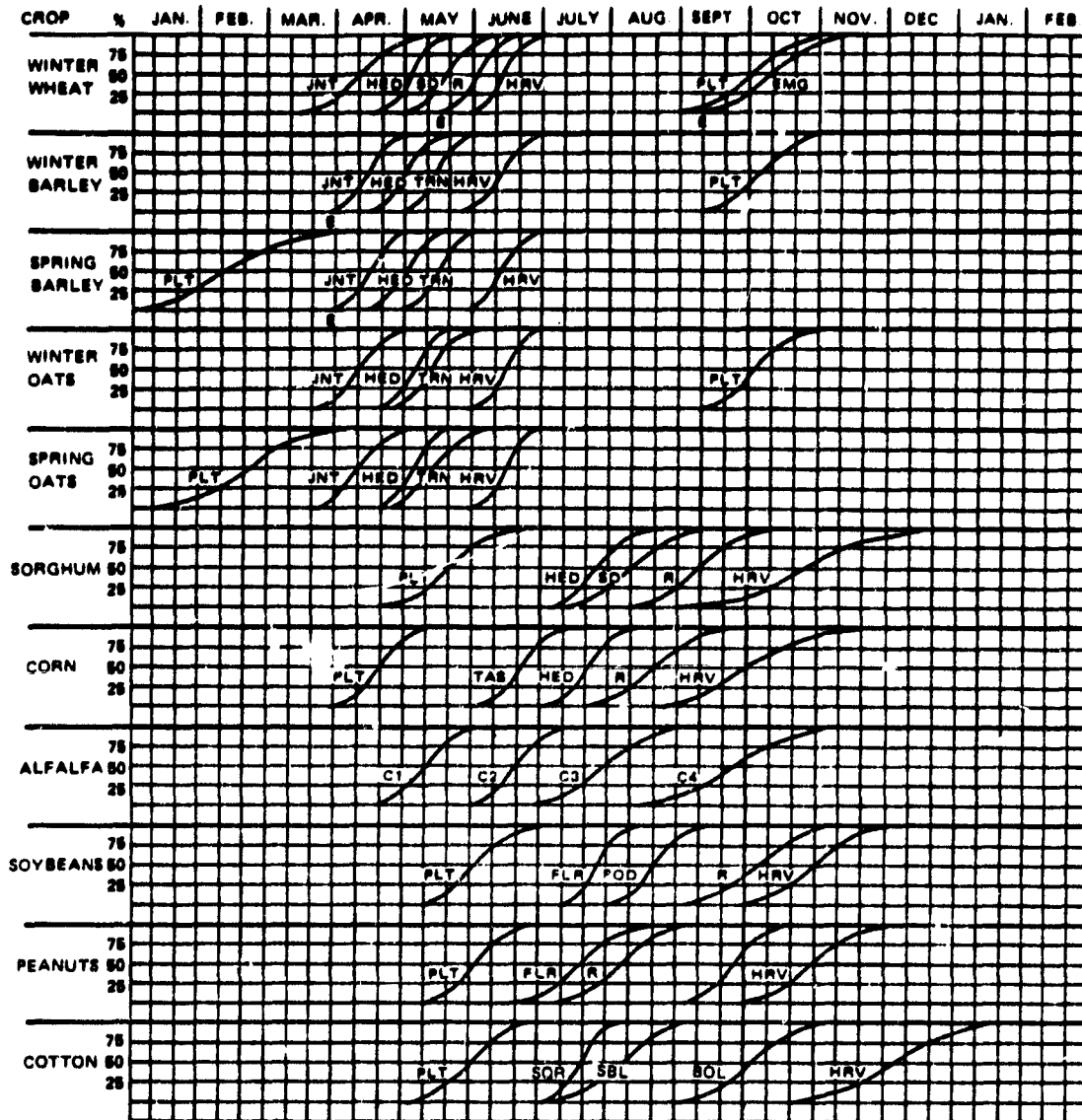


LEGEND

E Under stage name, indicates rough estimate of date
EMG Emergence
HED Heading
HRV Harvest
JNT Jointing
PLT Planting
R Ripe
SD Soft dough
TRN Turning
TAS Tasseling
C Cut

ORIGINAL PAGE 13 OF POOR QUALITY

CROP CALENDARS PLOTTED 01/08/78
PERCENT OF AREA IN DEVELOPMENT STAGE BY SPECIFIED DATE FOR
OKLAHOMA CRD 55 AVERAGE CROP CALENDARS FROM 1964 TO 1973

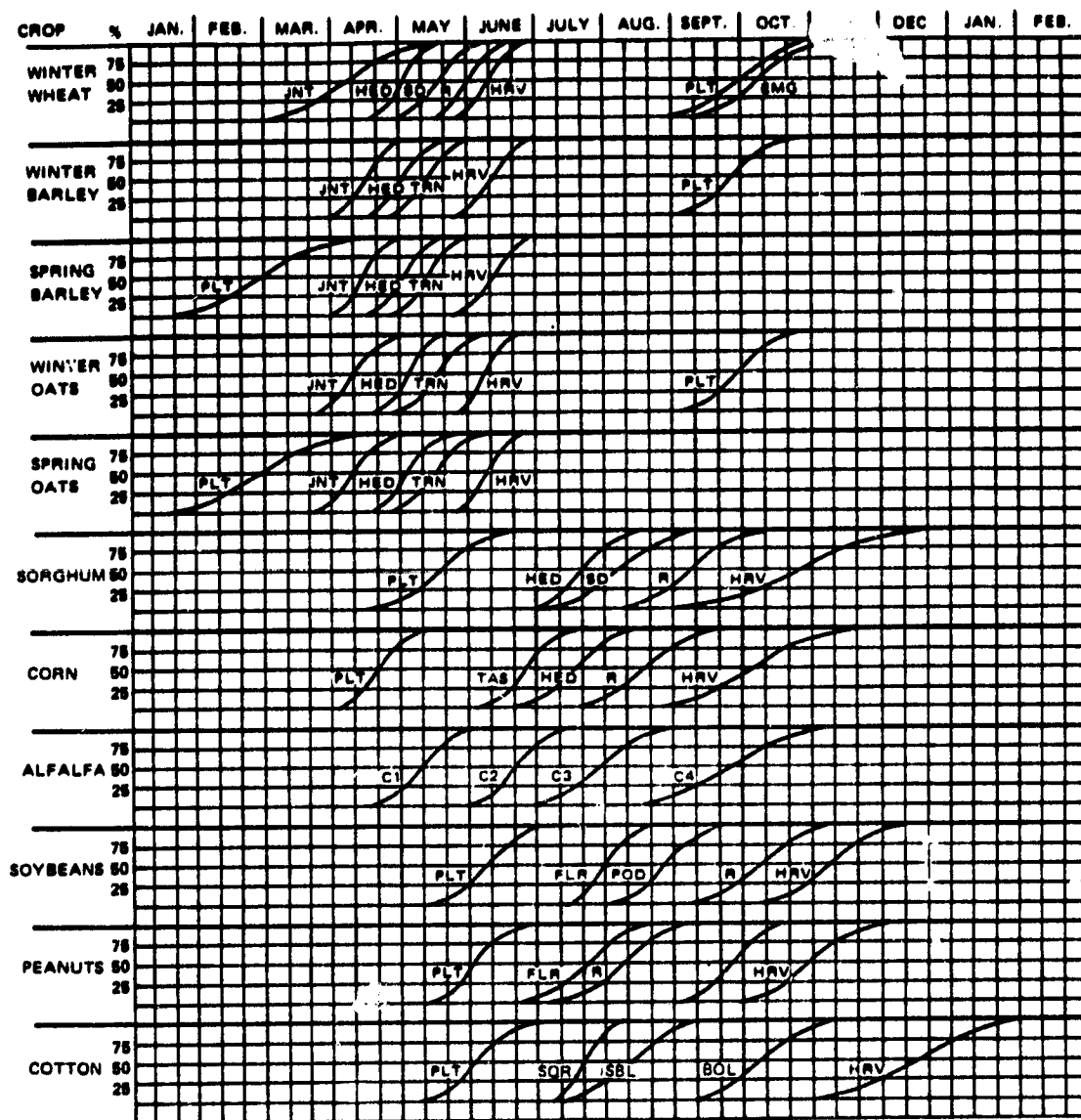


LEGEND

E Under stage name, indicates rough estimate of date
EMG Emergence
HED Heading
HRV Harvest
JNT Jointing
PLT Planting
R Ripe
SD Soft dough
TRN Turning
TAS Tasseling
C Cut
FLR Flowering
SQR Squaring
SBL Soft boll
BOL Bolling

ORIGINAL PAGE IS
OF POOR QUALITY

CROP CALENDARS PLOTTED 01/06/76
PERCENT OF AREA IN DEVELOPMENT STAGE BY SPECIFIED DATE FOR
OKLAHOMA CRD 66 AVERAGE CROP CALENDARS FROM 1964 TO 1973

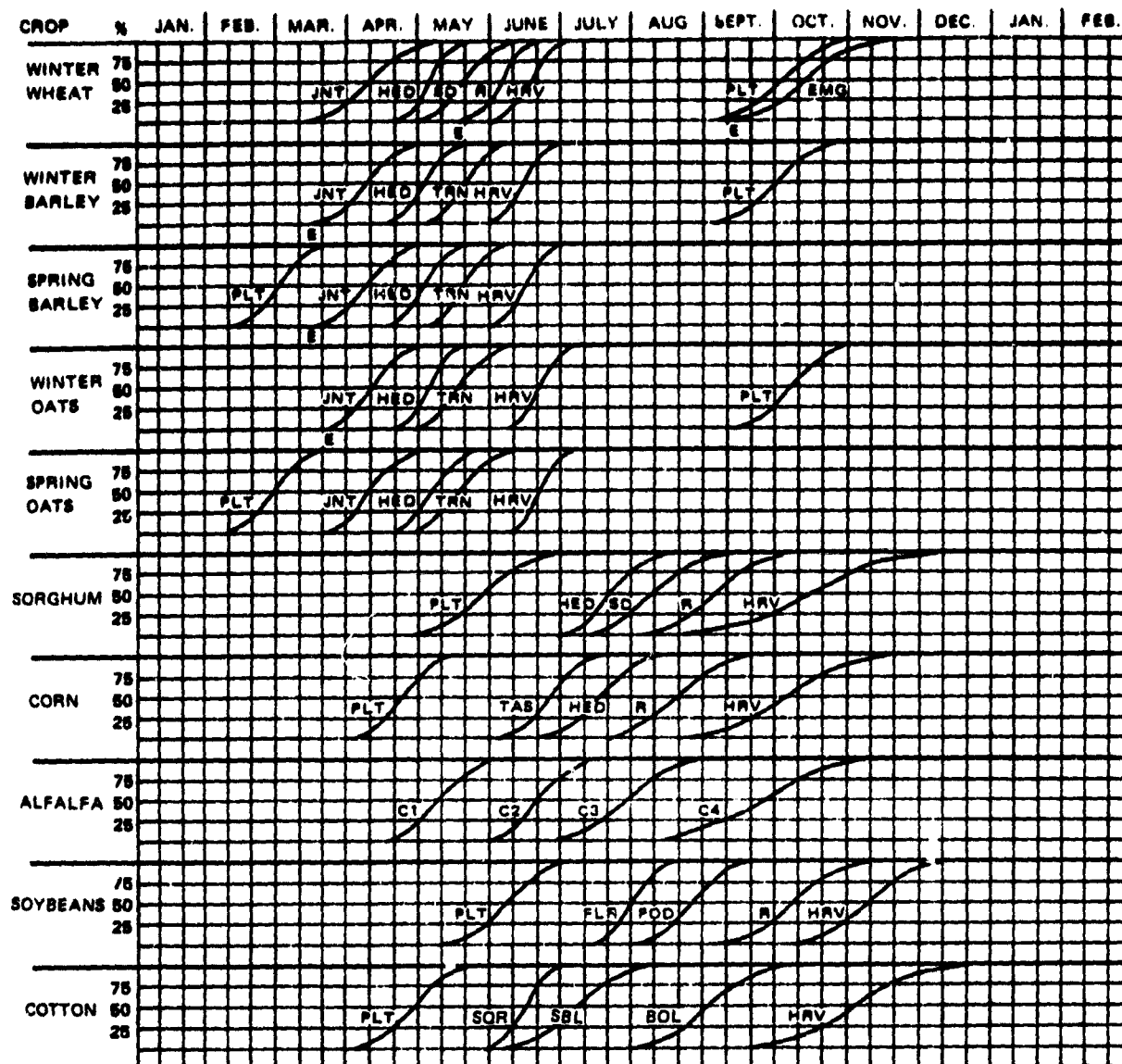


LEGEND

E Under stage name, indicates rough estimate of date
EMG Emergence
HED Heading
HRV Harvest
JNT Jointing
PLT Planting
R Ripe
SD Soft dough
TRN Turning
TAS Tasseling
C Cut
FLR Flowering
SQR Squaring
SBL Soft ball
BOL Bolling

ORIGINAL PAGE IS
OF POOR QUALITY

CROP CALENDARS PLOTTED 01/06/76
PERCENT OF AREA IN DEVELOPMENT STAGE BY SPECIFIED DATE FOR
OKLAHOMA CRD 73 AVERAGE CROP CALENDARS FROM 1964 TO 1973

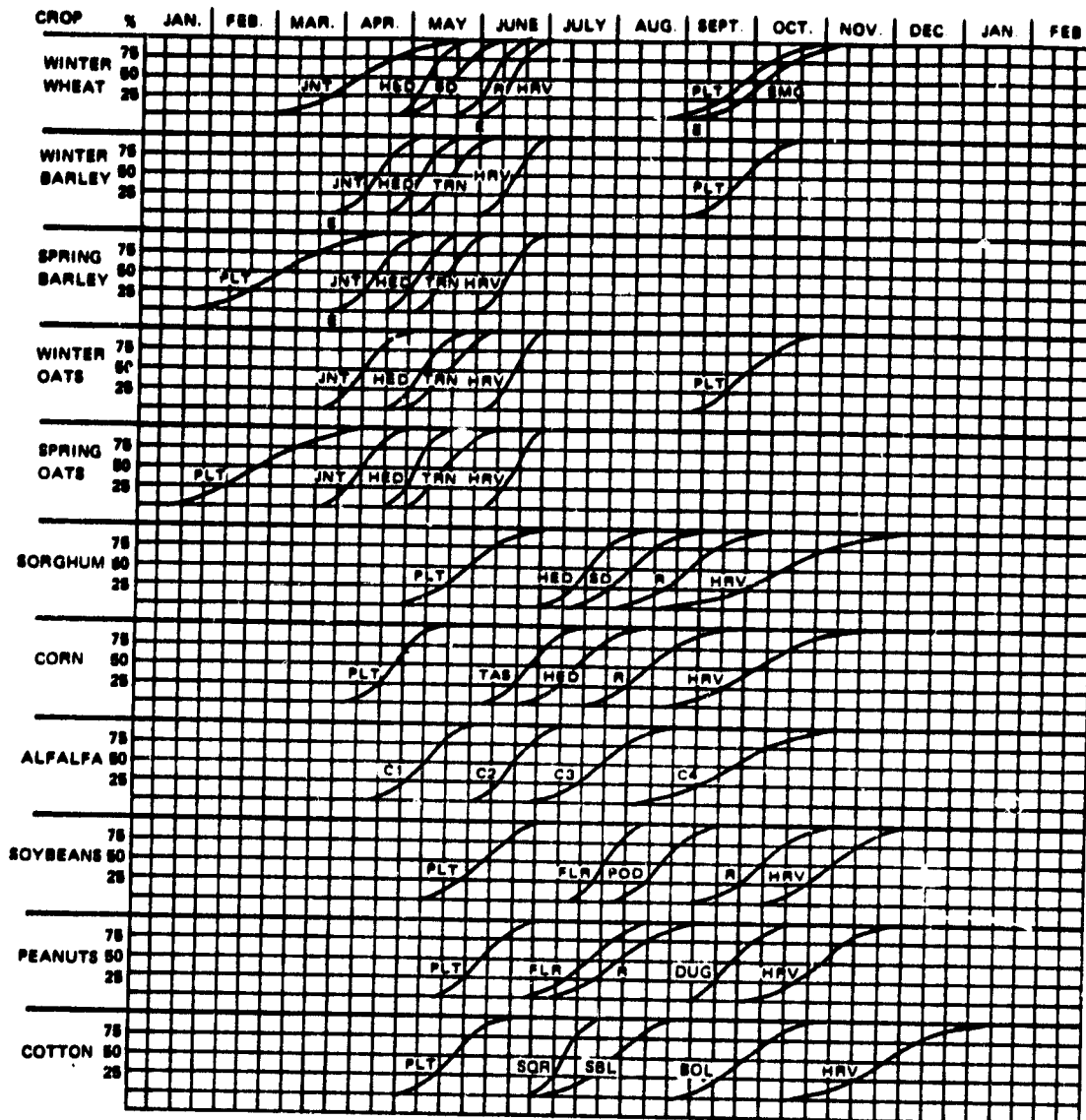


LEGEND

E Under stage name, indicates rough estimate of date
EMG Emergence
HED Heading
HRV Harvest
JNT Jointing
PLT Planting
R Ripe
SD Soft dough
TRN Turning
TAS Tasseling
C Cut
FLR Flowering
SQR Squaring
SBL Soft boll
BOL Bolling

ORIGINAL PAGE IS
OF POOR QUALITY

CROP CALENDARS PLOTTED 01/03/76
PERCENT OF AREA IN DEVELOPMENT STAGE BY SPECIFIED DATE FOR
OKLAHOMA CRD 86 AVERAGE CROP CALENDARS FROM 1964 TO 1973

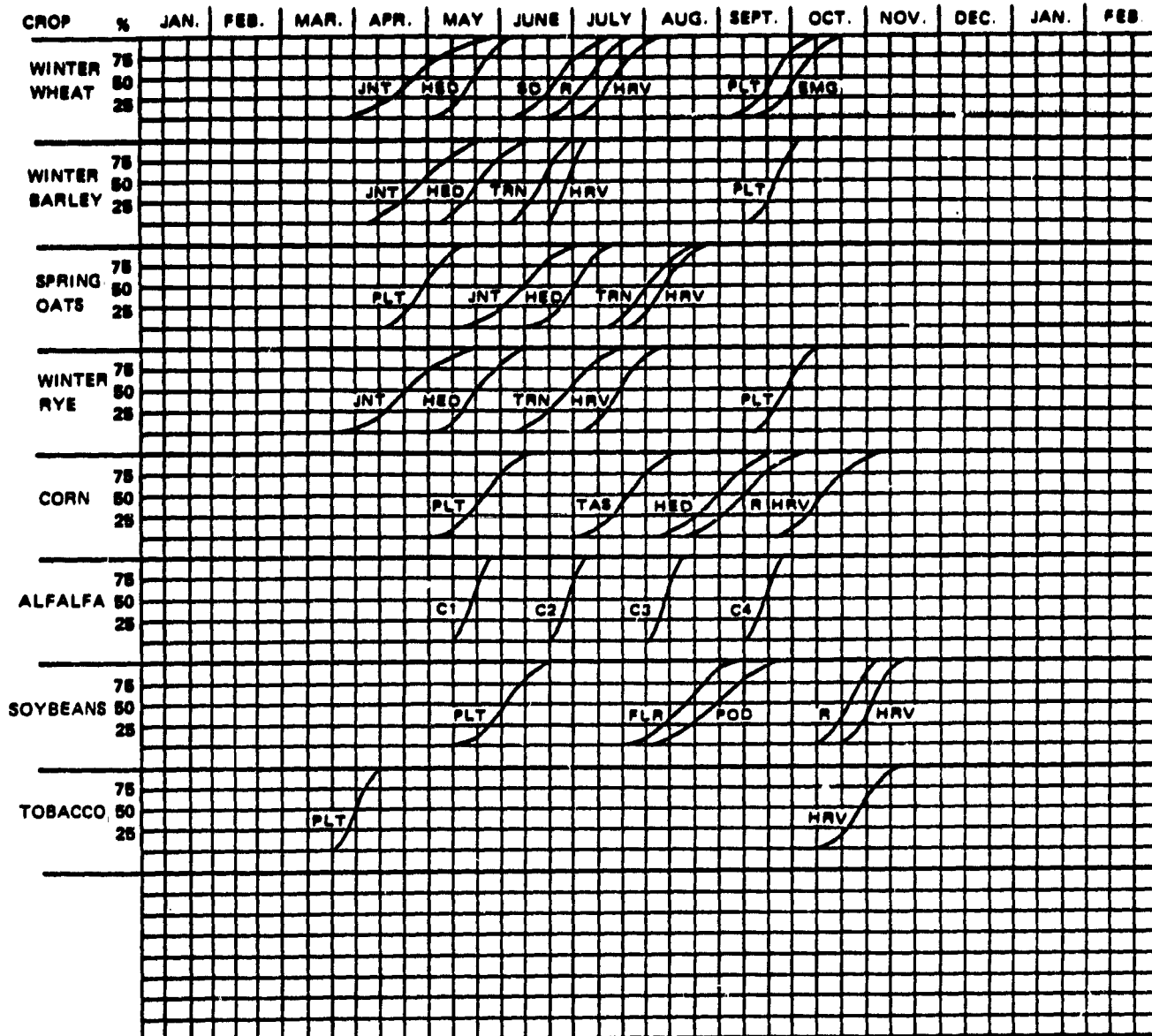


LEGEND

E Under stage name, indicates rough estimate of date
 EMG Emergence
 HED Heading
 HRV Harvest
 JNT Jointing
 PLT Planting
 R Ripe
 SD Soft dough
 TRN Turning
 TAS Tasseling
 C Cut
 FLR Flowering
 DUG Dug
 SQR Squaring
 SBL Soft boll
 BOL Bailing

ORIGINAL PAGE IS OF POOR QUALITY

CROP CALENDARS PLOTTED 01/06/76
PERCENT OF AREA IN DEVELOPMENT STAGE BY SPECIFIED DATE FOR
PENNSYLVANIA ESTIMATED AVERAGE CROP CALENDARS FROM USDA BULLETIN 283

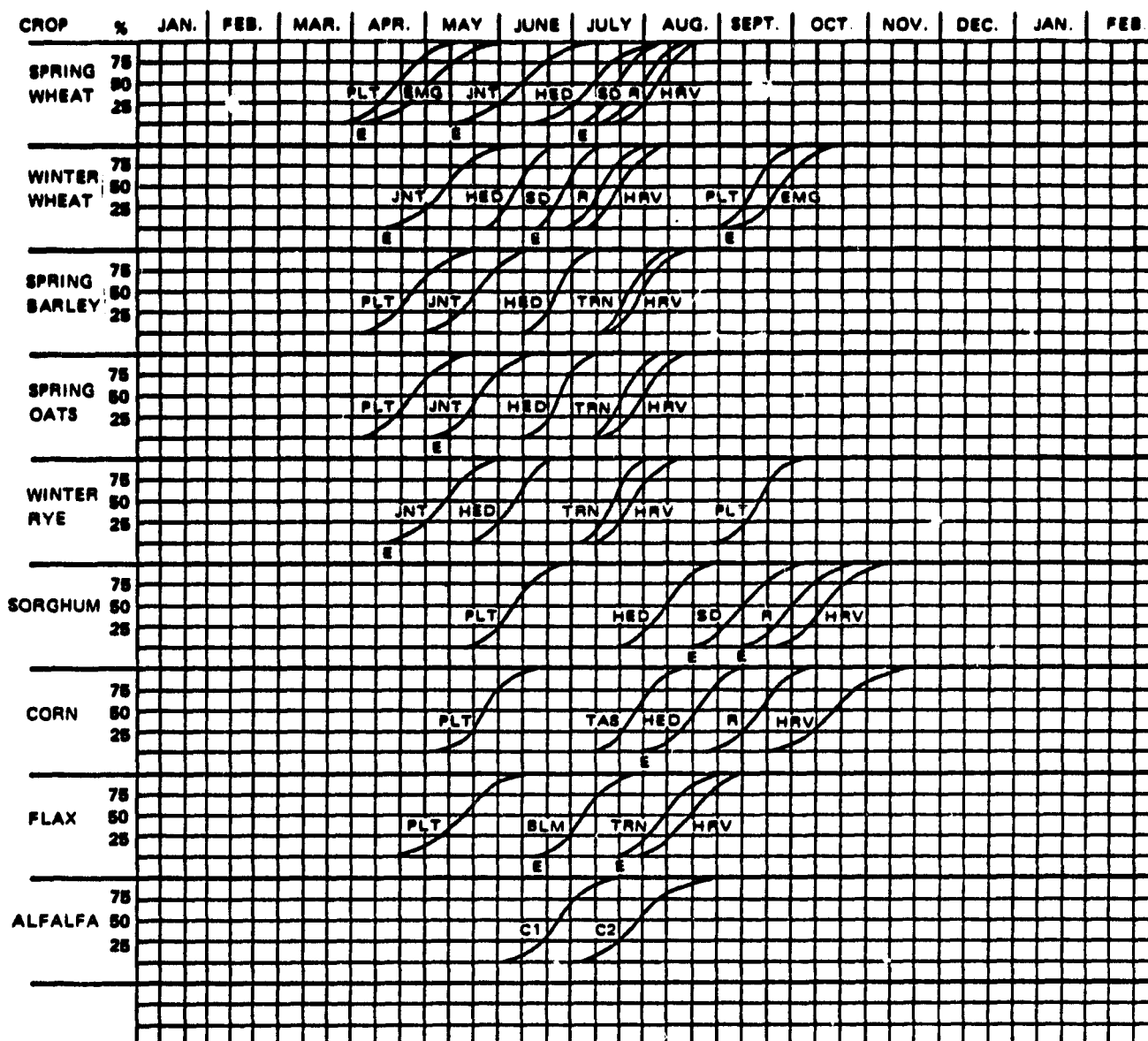


LEGEND

E Under stage name, indicates rough estimate of date
 EMG Emergence
 HED Heading
 HRV Harvest
 JNT Jointing
 PLT Planting
 R Ripe
 SD Soft dough
 TRN Turning
 TAS Tasseling
 C Cut
 FLR Flowering

ORIGINAL PAGE IS
OF POOR QUALITY

CROP CALENDARS PLOTTED 01/08/78
PERCENT OF AREA IN DEVELOPMENT STAGE BY SPECIFIED DATE FOR
SOUTH DAKOTA CRD 10 AVERAGE CROP CALENDARS FROM 1960 TO 1969

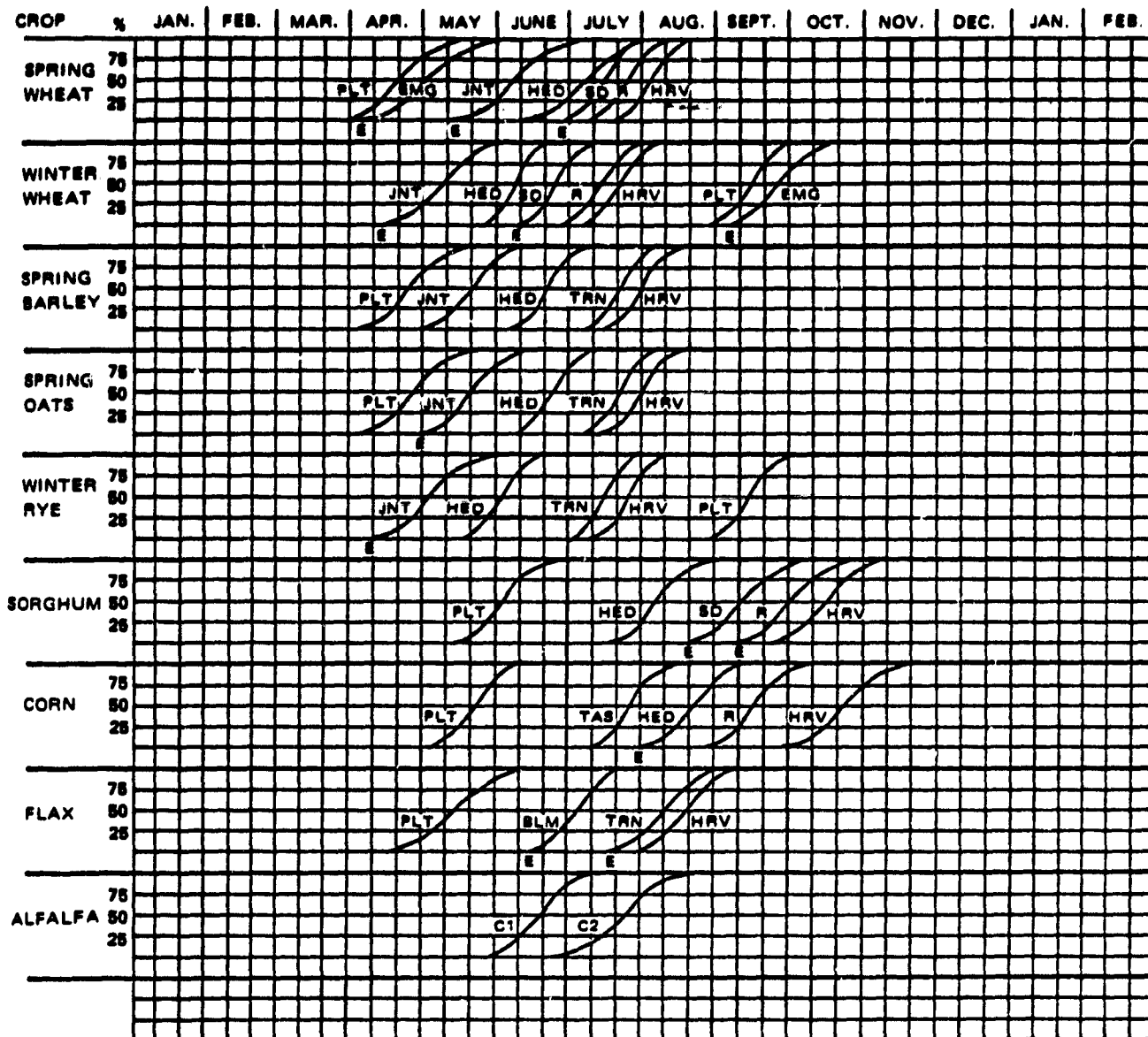


LEGEND

E Under stage name, indicates rough estimate of date
 EMC Emergence
 HED Heading
 HRV Harvest
 JNT Jointing
 PLT Planting
 R Ripe
 SD Soft dough
 TRN Turning
 TAS Tasseling
 BLM Blooming
 C Cut

ORIGINAL PAGE IS
OF POOR QUALITY

CROP CALENDARS PLOTTED 01/06/78
PERCENT OF AREA IN DEVELOPMENT STAGE BY SPECIFIED DATE FOR
SOUTH DAKOTA CRD 20 AVERAGE CROP CALENDARS FROM 1960 TO 1969

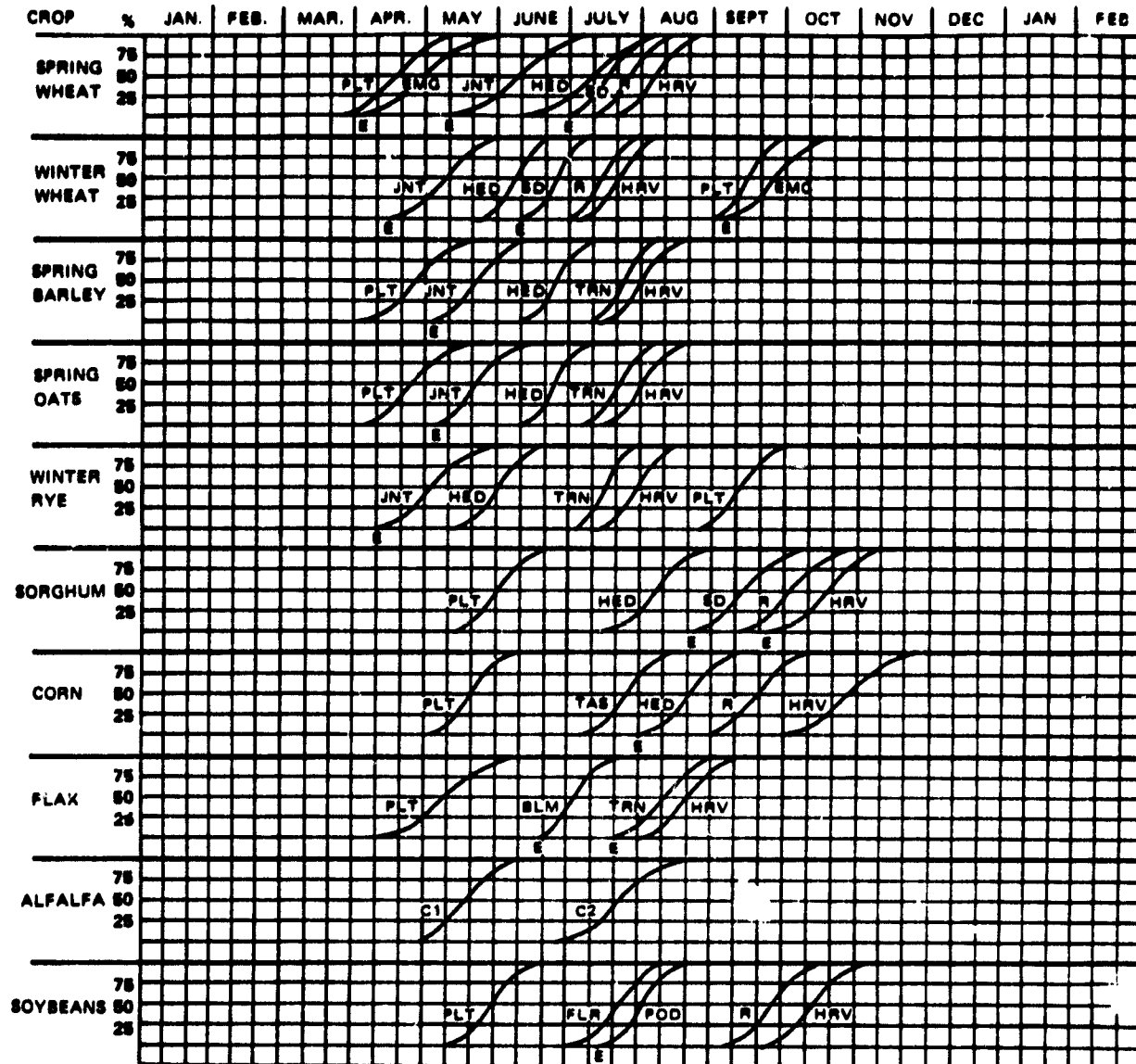


LEGEND

E Under stage name, indicates rough estimate of date
EMG Emergence
HED Heading
HRV Harvest
JNT Jointing
PLT Planting
R Ripe
SD Soft dough
TRN Turning
TAS Tasseling
BLM Blooming
C Cut

ORIGINAL PAGE IS
OF POOR QUALITY

CROP CALENDARS PLOTTED 01/08/78
PERCENT OF AREA IN DEVELOPMENT STAGE BY SPECIFIED DATE FOR
SOUTH DAKOTA CRD 30 AVERAGE CROP CALENDARS FROM 1960 TO 1969

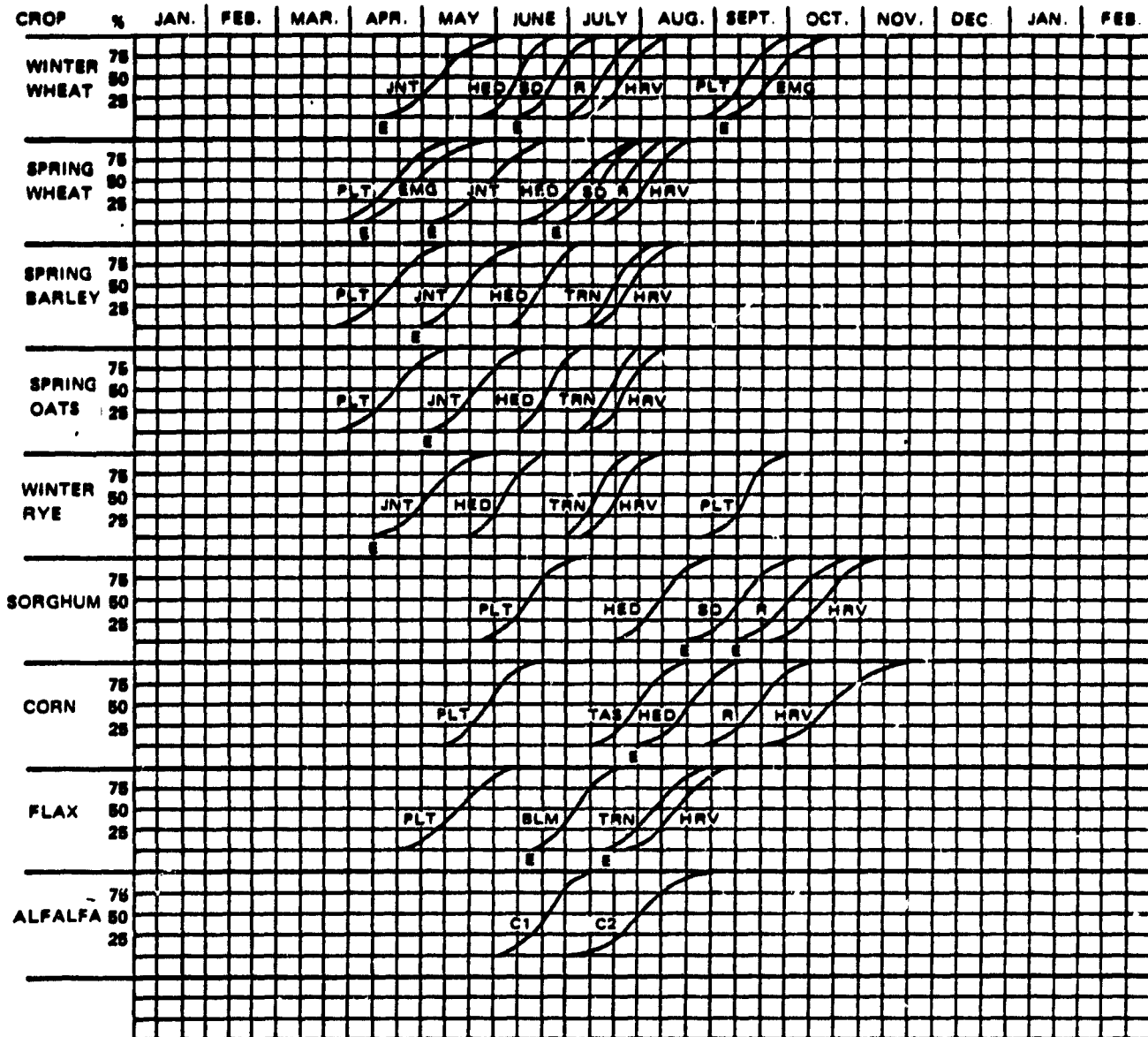


LEGEND

E Under stage name, indicates rough estimate of date
EMG Emergence
HED Heading
HRV Harvest
JNT Jointing
PLT Planting
R Ripe
SD Soft dough
TRN Turning
TAS Tasseling
BLM Blooming
C Cut
FLR Flowering

ORIGINAL PAGE IS OF POOR QUALITY

CROP CALENDARS PLOTTED 01/06/76
PERCENT OF AREA IN DEVELOPMENT STAGE BY SPECIFIED DATE FOR
SOUTH DAKOTA CRD 40 AVERAGE CROP CALENDARS FROM 1960 TO 1969

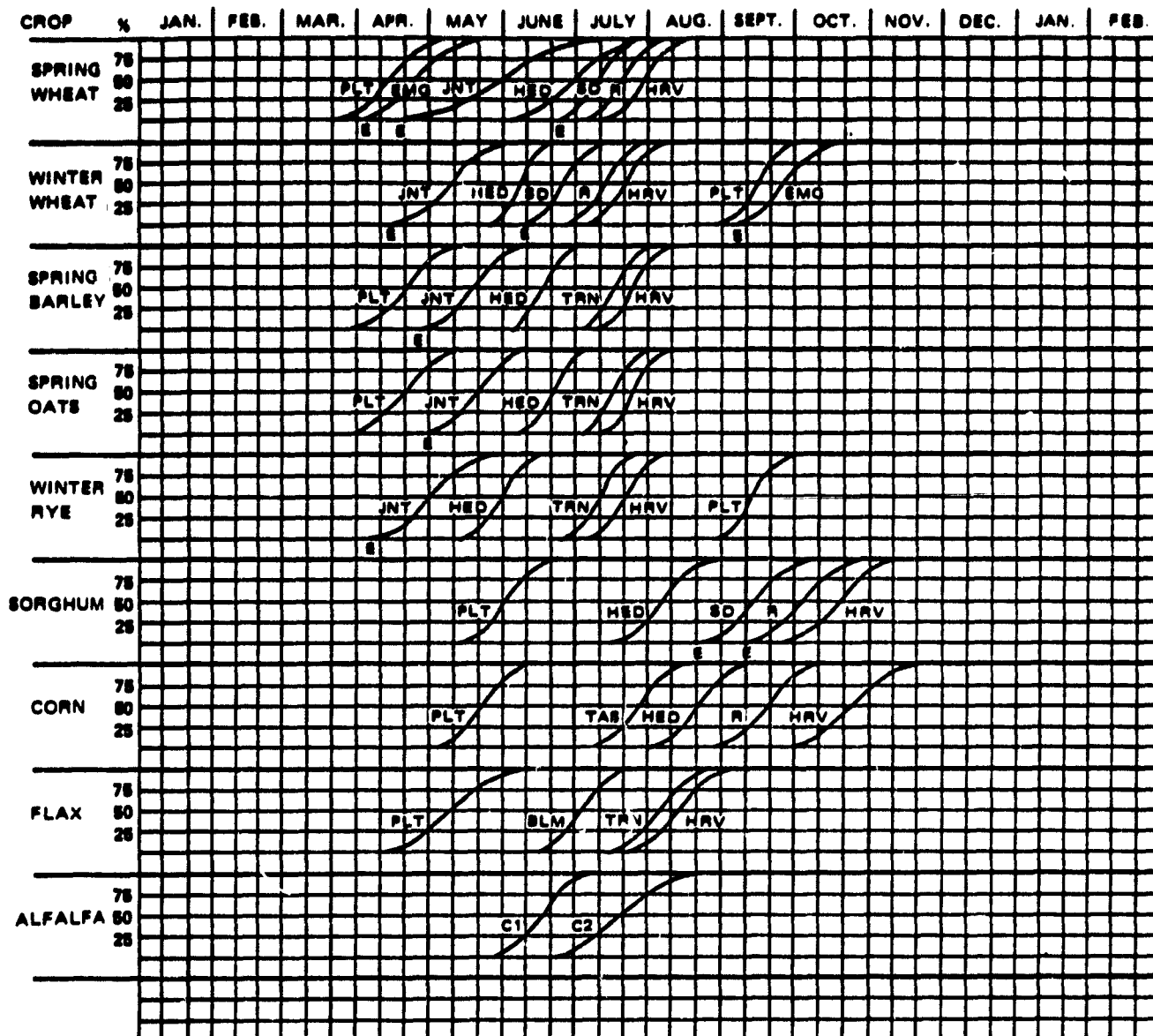


LEGEND

E Under stage name, indicates rough estimate of date
EMG Emergence
HED Heading
HRV Harvest
JNT Jointing
PLT Planting
R Ripe
SD Soft dough
TRN Turning
TAS Tesseling
C Cut
BLM Blooming

ORIGINAL PAGE IS
OF POOR QUALITY

CROP CALENDARS PLOTTED 01/06/76
PERCENT OF AREA IN DEVELOPMENT STAGE BY SPECIFIED DATE FOR
SOUTH DAKOTA CRD 50 AVERAGE CROP CALENDARS FROM 1960 TO 1969

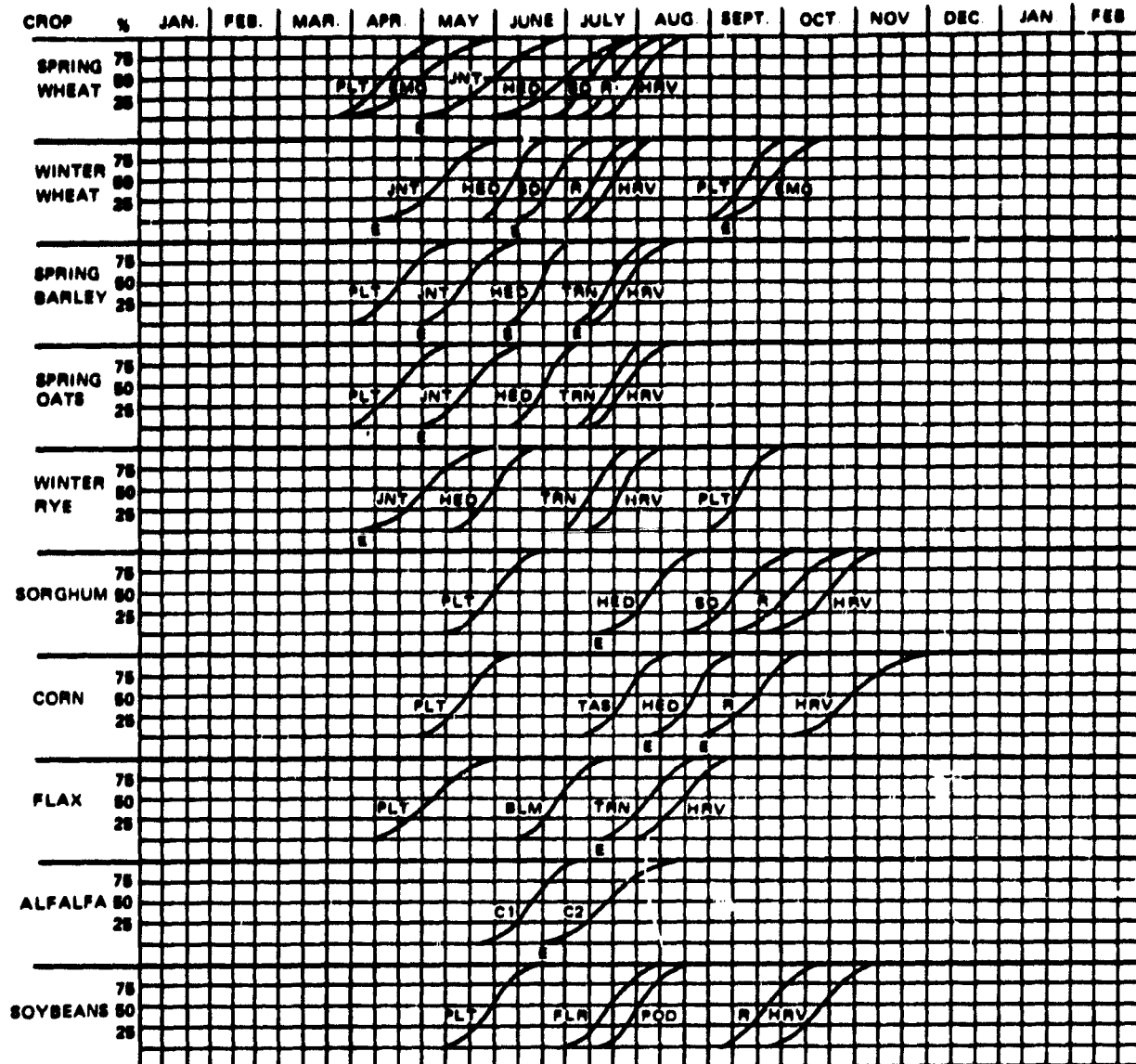


LEGEND

E Under stage name, indicates rough estimate of date
 EMG Emergence
 HED Heading
 HRV Harvest
 JNT Jointing
 PLT Planting
 R Ripe
 SD Soft dough
 TRN Turning
 TAS Tasseling
 BLM Blooming
 C Cut

ORIGINAL PAGE IS
OF POOR QUALITY

CROP CALENDARS PLOTTED 01/06/76
PERCENT OF AREA IN DEVELOPMENT STAGE BY SPECIFIED DATE FOR
SOUTH DAKOTA CRD 60 AVERAGE CROP CALENDARS FROM 1960 TO 1969

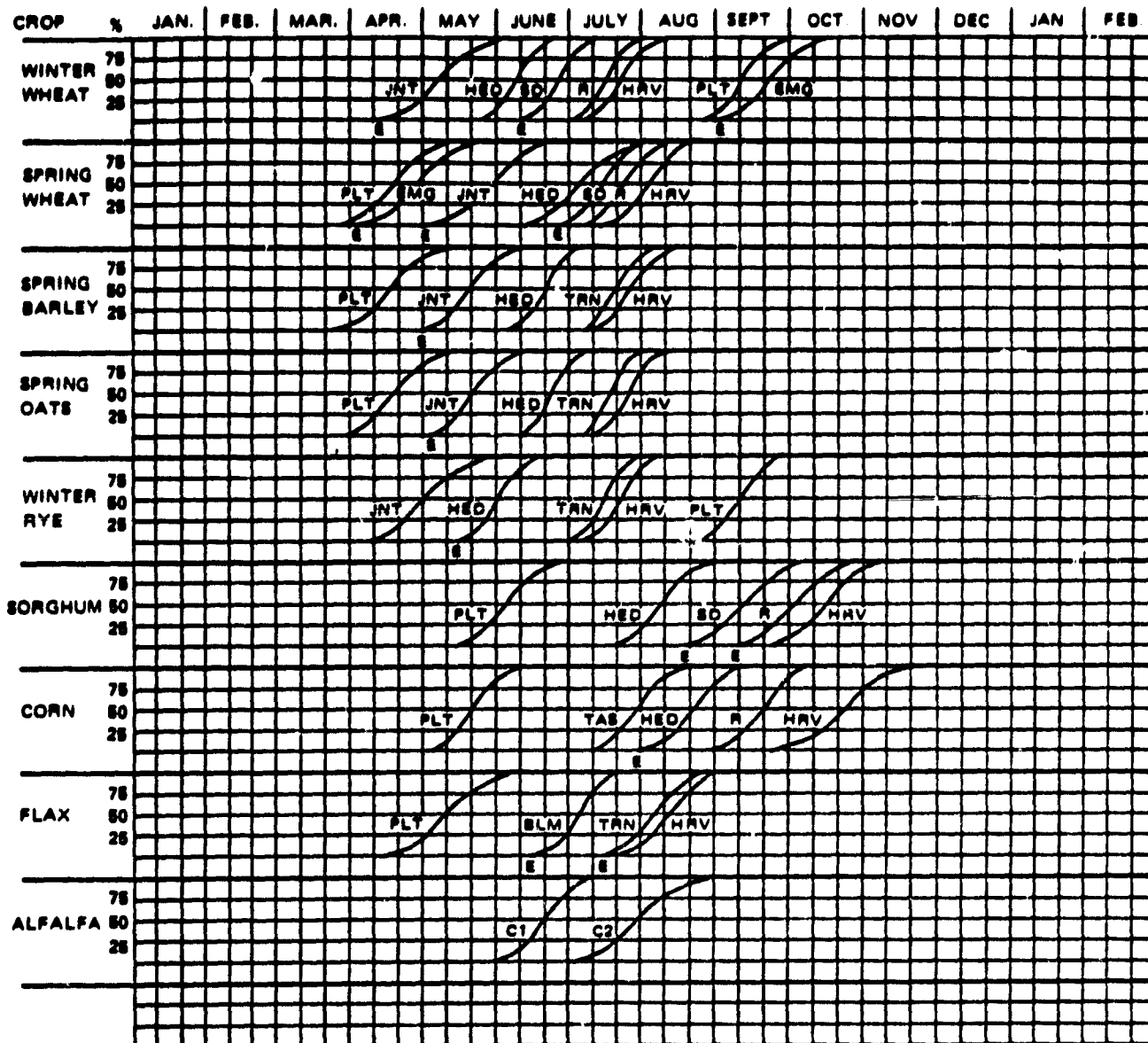


LEGEND

E Under stage name, indicates rough estimate of date
EMG Emergence
HED Heading
HRV Harvest
JNT Jointing
PLT Planting
R Ripe
SD Soft dough
TRN Turning
TAS Tasseling
C Cut
FLR Flowering
BLM Blooming

ORIGINAL PAGE 15
OF POOR QUALITY

CROP CALENDARS PLOTTED 01/06/78
PERCENT OF AREA IN DEVELOPMENT STAGE BY SPECIFIED DATE FOR
SOUTH DAKOTA CRD 70 AVERAGE CROP CALENDARS FROM 1960 TO 1969

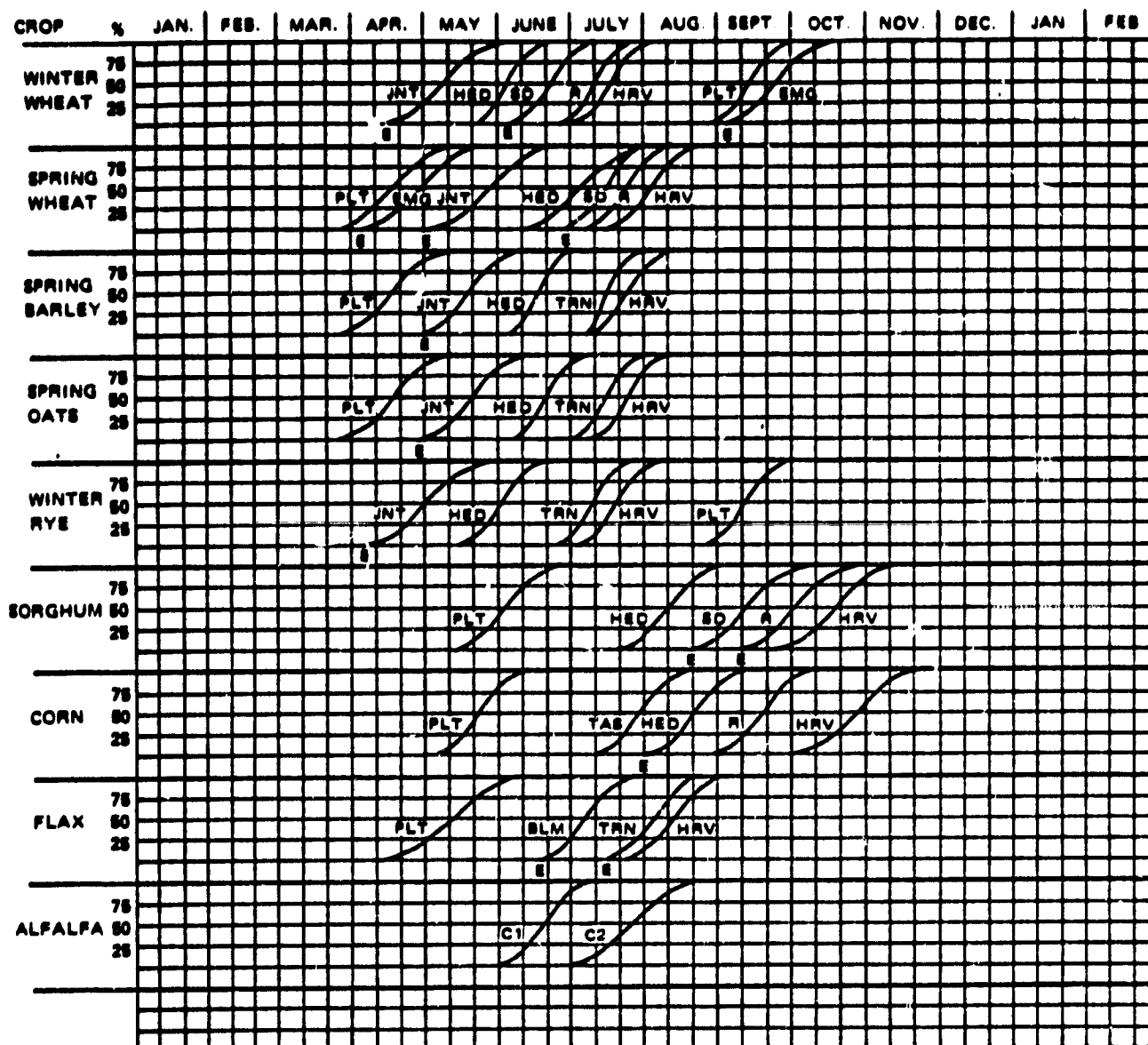


LEGEND

E Under stage name, indicates rough estimate of date
 EMG Emergence
 HED Heading
 HRV Harvest
 JNT Jointing
 PLT Planting
 R Ripe
 SD Soft dough
 TRN Turning
 TAS Tasseling
 BLM Blooming
 C Cut

ORIGINAL PAGE 10
OF POOR QUALITY

CROP CALENDARS PLOTTED 01/06/76
PERCENT OF AREA IN DEVELOPMENT STAGE BY SPECIFIED DATE FOR
SOUTH DAKOTA CRO 80 AVERAGE CROP CALENDARS FROM 1960 TO 1969

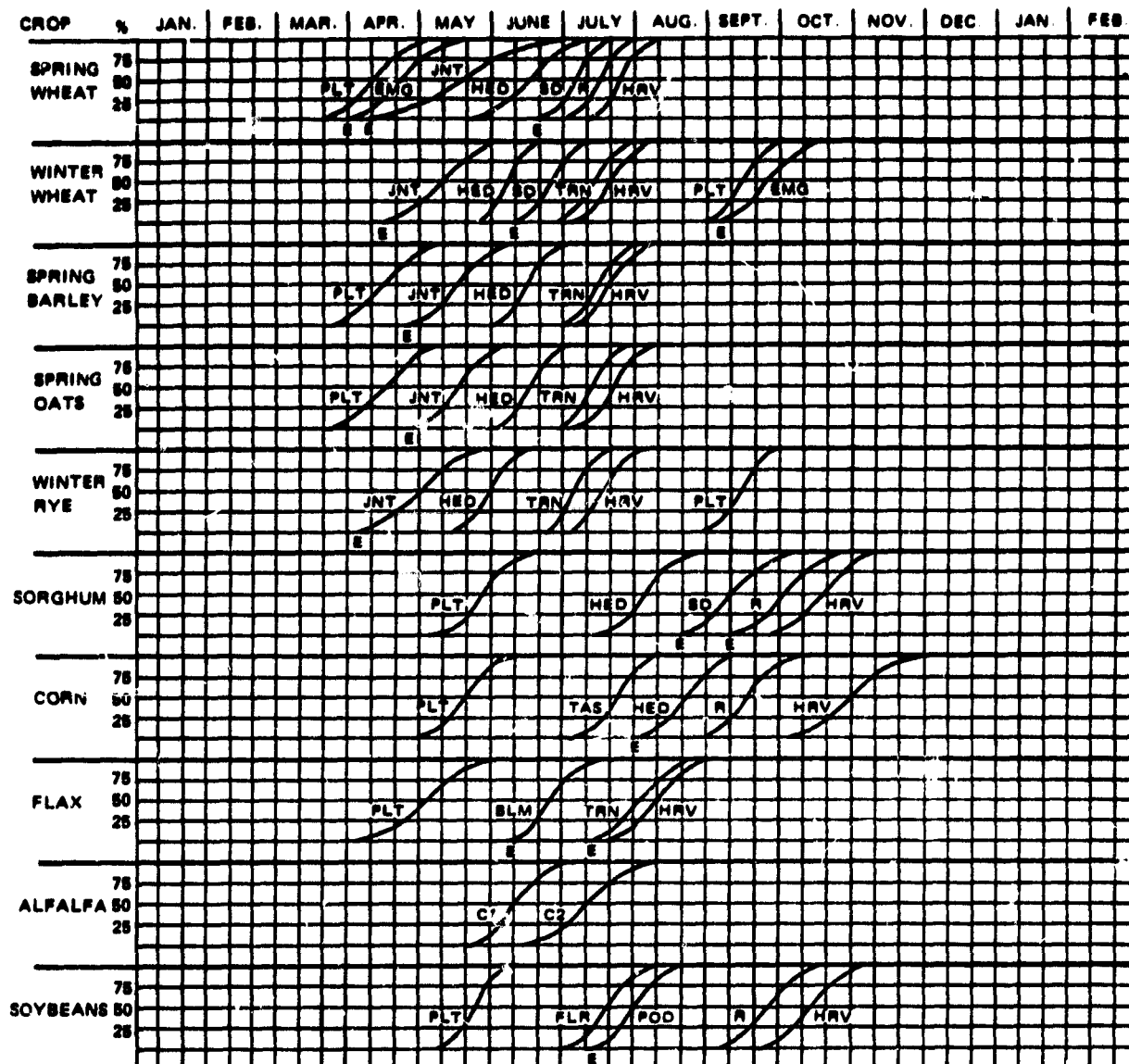


LEGEND

E Under stage name, indicates rough estimate of date
 EMG Emergence
 HED Heading
 HRV Harvest
 JNT Jointing
 PLT Planting
 R Ripe
 SD Soft dough
 TRN Turning
 TAS Tasseling
 BLM Blooming
 C Cut

ORIGINAL PAGE IS
OF POOR QUALITY

CROP CALENDARS PLOTTED 01/06/76
PERCENT OF AREA IN DEVELOPMENT STAGE BY SPECIFIED DATE FOR
SOUTH DAKOTA CRD 90 AVERAGE CROP CALENDARS FROM 1960 TO 1969

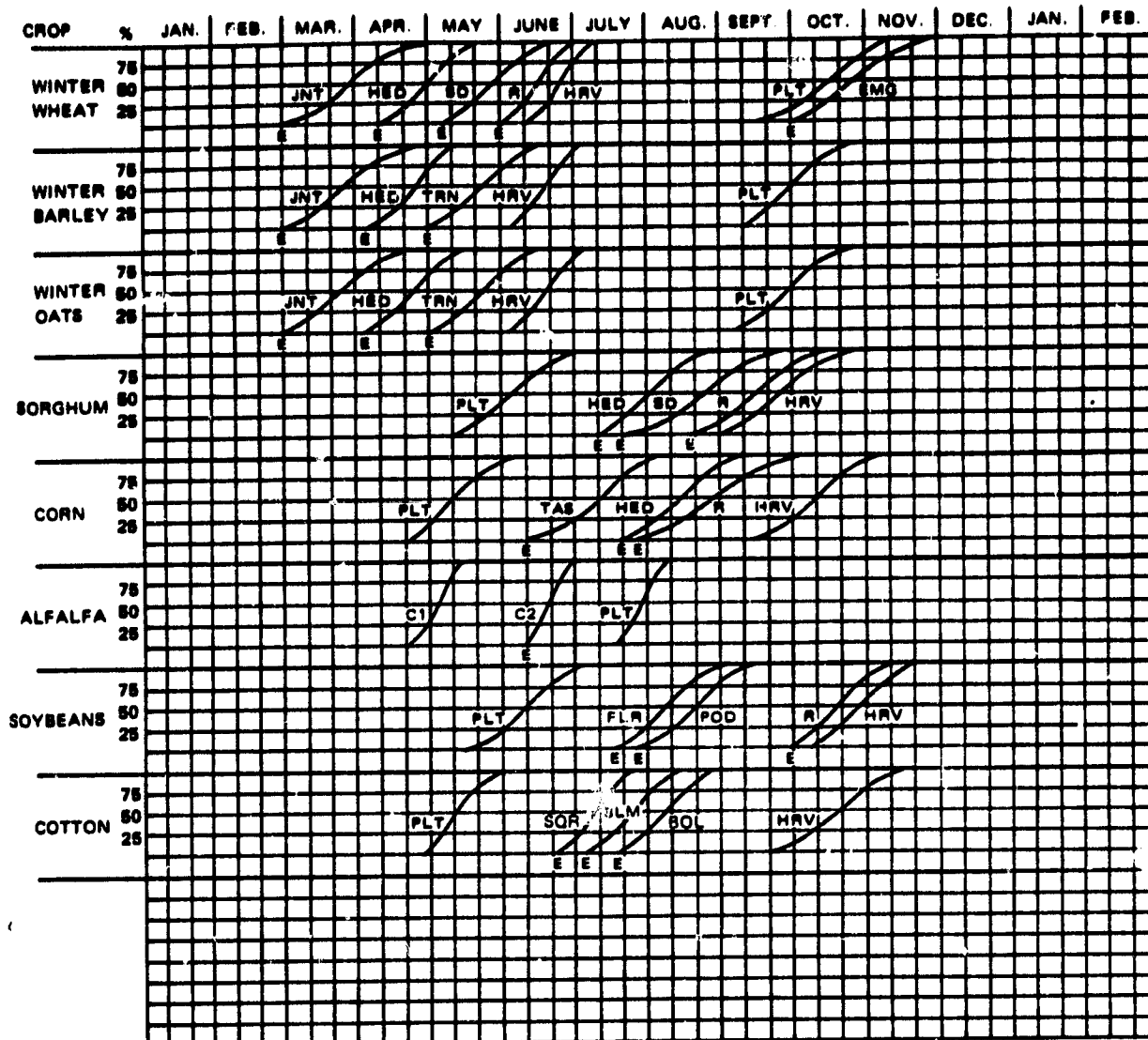


LEGEND

E Under stage name, indicates rough estimate of date
EMG Emergence
HED Heading
HRV Harvest
JNT Jointing
PLT Planting
R Ripe
SD Soft dough
TRN Turning
TAS Tasseling
BLM Blooming
C Cut
FLR Flowering

ORIGINAL PAGE 75
OF POOR QUALITY.

CROP CALENDARS PLOTTED 01/06/76
PERCENT OF AREA IN DEVELOPMENT STAGE BY SPECIFIED DATE FOR
TENNESSEE CRD 2 ESTIMATED AVERAGE CROP CALENDARS FROM USDA BULLETIN 283

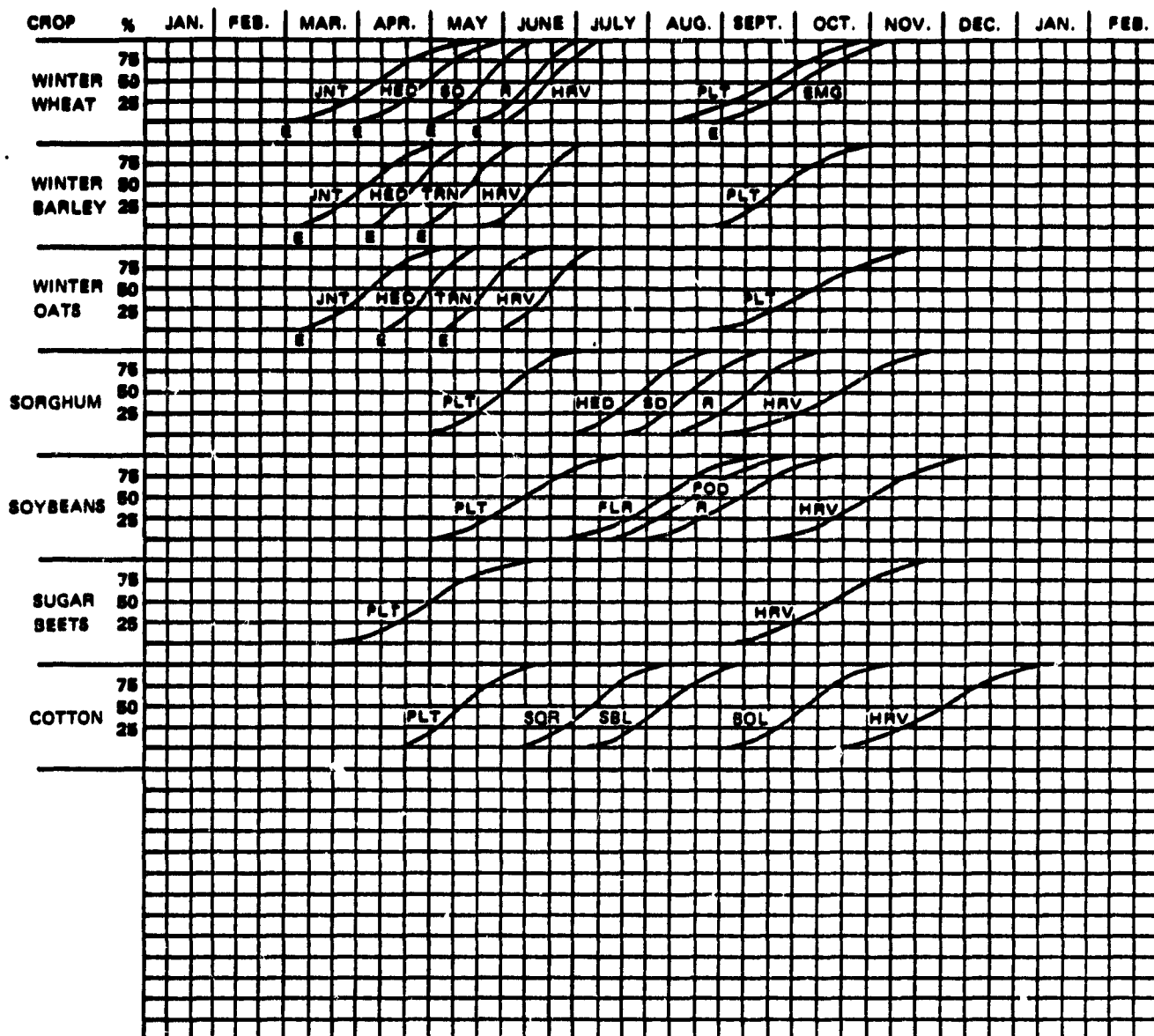


LEGEND

E Under stage name, indicates rough estimate of date
 EMG Emergence
 HED Heading
 HRV Harvest
 JNT Jointing
 PLT Planting
 R Ripe
 SD Soft dough
 TRN Turning
 TAS Tasseling
 C Cut
 FLR Flowering
 SQR Squaring
 BLM Blooming
 BOLL Bolling

ORIGINAL PAGE IS
OF POOR QUALITY

CROP CALENDARS PLOTTED 01/06/78
PERCENT OF AREA IN DEVELOPMENT STAGE BY SPECIFIED DATE FOR
TEXAS CRD 1 AVERAGE CROP CALENDARS FOR 1964-66 AND 1971-73

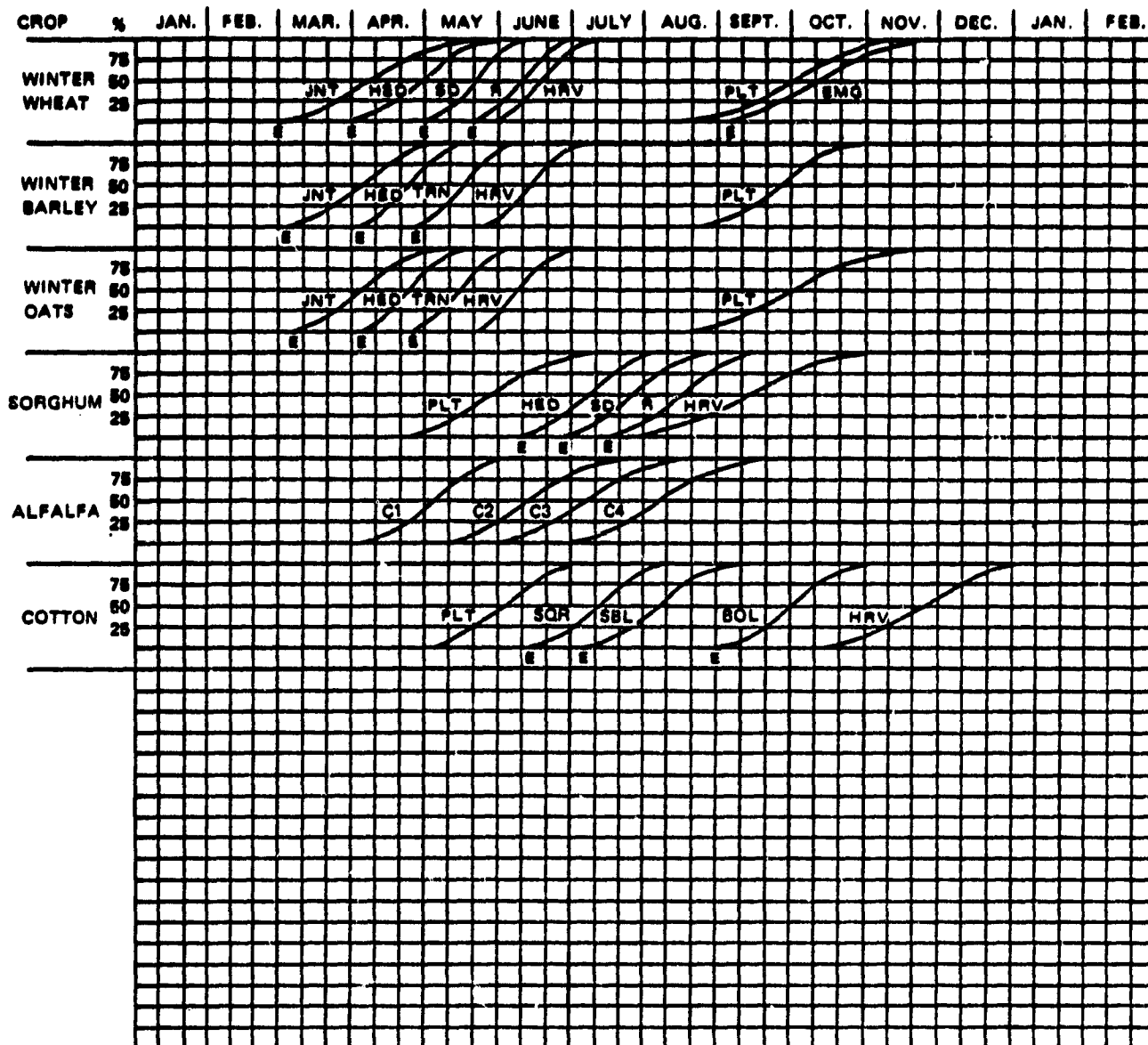


LEGEND

E Under stage name, indicates rough estimate of date
EMG Emergence
HED Heading
HRV Harvest
JNT Jointing
PLT Planting
R Ripe
SD Soft dough
TRN Turning
SQR Squaring
SBL Soft boll
BOL Bolling

ORIGINAL PAGE IS
OF POOR QUALITY.

CROP CALENDARS PLOTTED 01/06/76
PERCENT OF AREA IN DEVELOPMENT STAGE BY SPECIFIED DATE FOR
TEXAS CRO 2 AVERAGE CROP CALENDARS FOR 1964-66 AND 1971-73

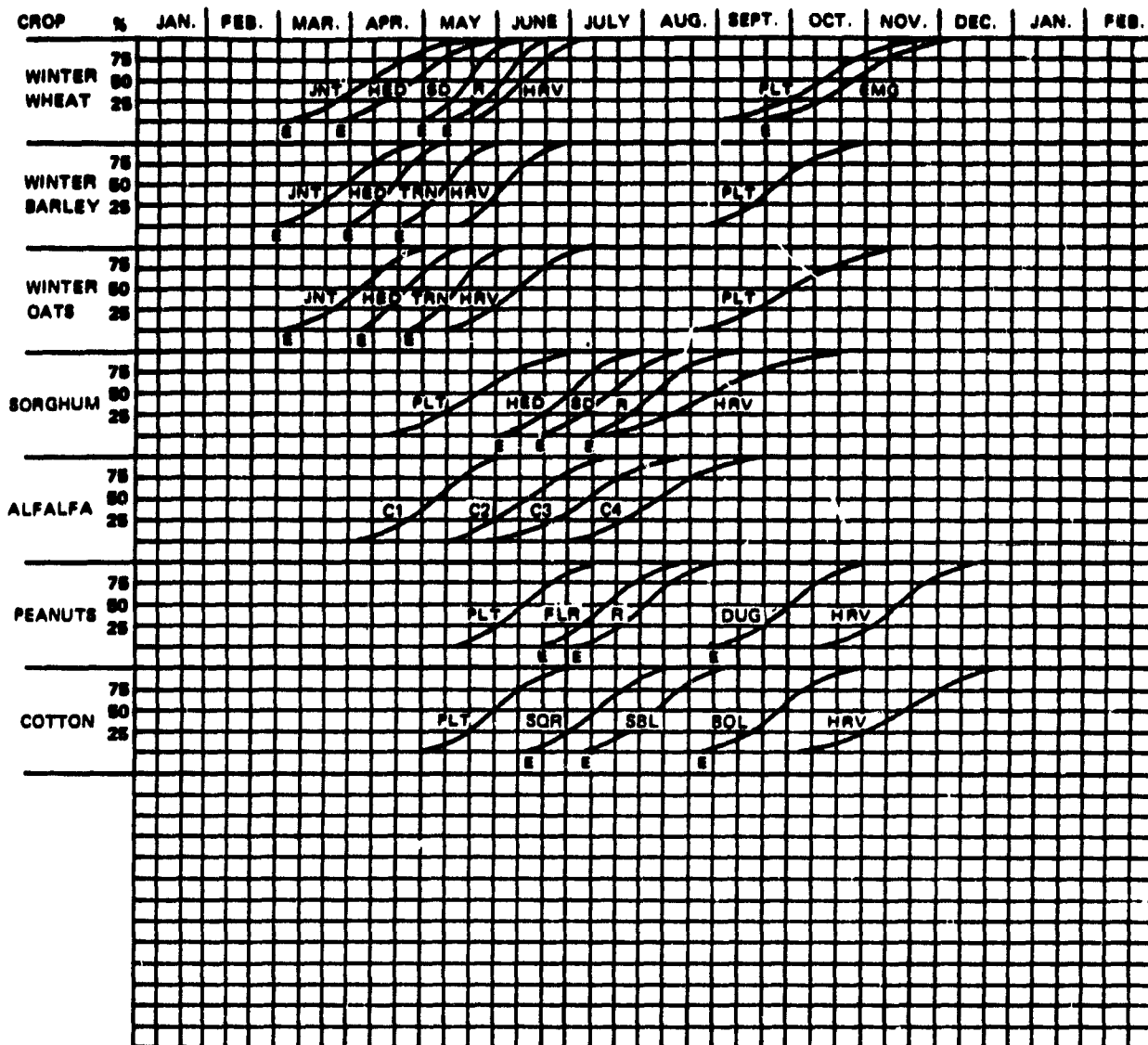


LEGEND

E Under stage name, indicates rough estimate of date
EMG Emergence
HED Heading
HRV Harvest
JNT Jointing
PLT Planting
R Ripe
SO Soft dough
TRN Turning
C Cut
SQR Squaring
SBL Soft boll
BOL Bolling

ORIGINAL PAGE IS
OF POOR QUALITY

CROP CALENDARS PLOTTED 01/06/76
PERCENT OF AREA IN DEVELOPMENT STAGE BY SPECIFIED DATE FOR
TEXAS CRD 3 AVERAGE CROP CALENDARS FOR 1964-66 AND 1971-73

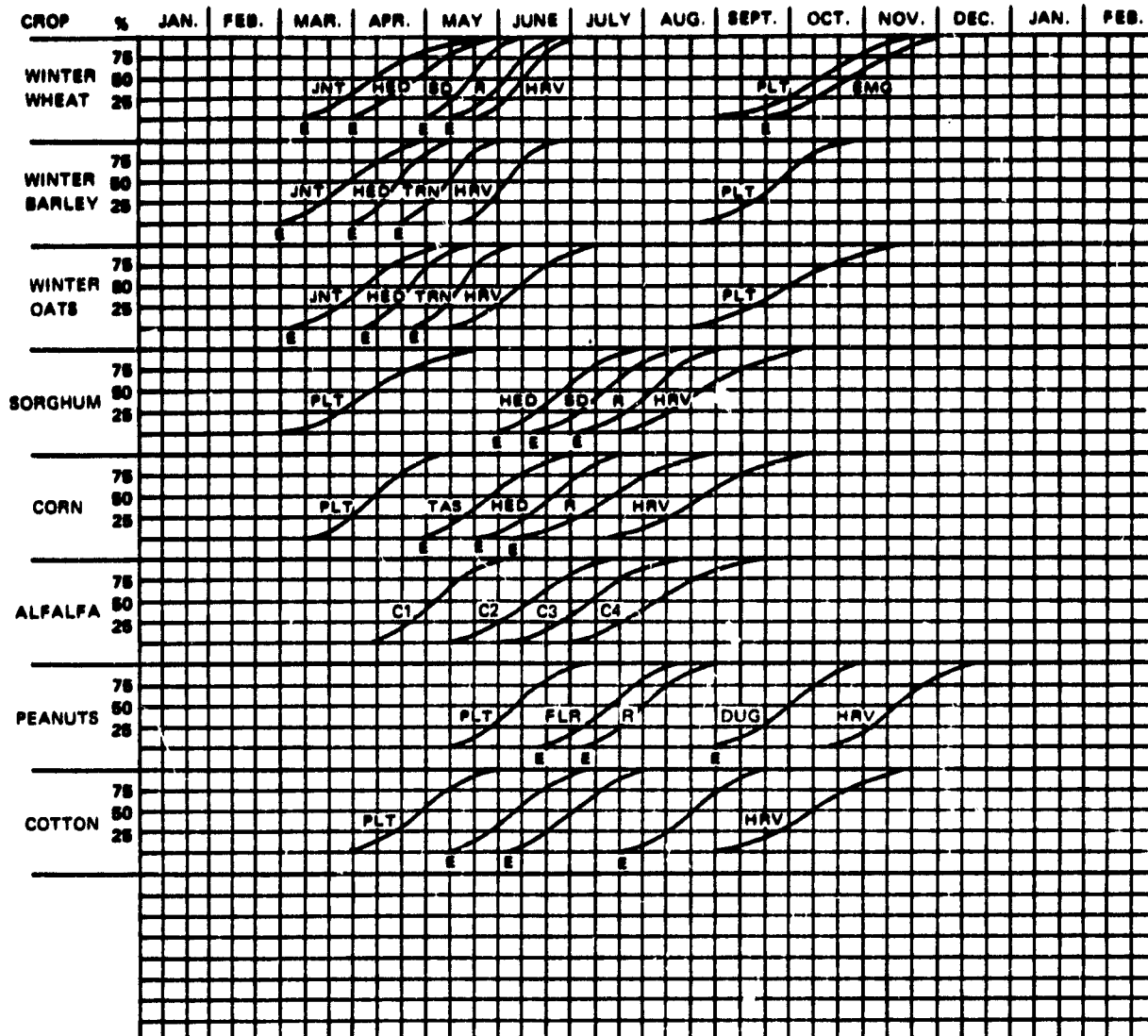


LEGEND

E	Under stage name, indicates rough estimate of date
EMG	Emergence
HED	Heading
HARV	Harvest
JNT	Jointing
PLT	Planting
R	Ripe
SD	Soft dough
TRN	Turning
C	CUT
FLR	Flowering
SQR	Squaring
SBL	Soft boll
BOL	Bolling

ORIGINAL PAGE IS
OF POOR QUALITY

CROP CALENDARS PLOTTED 01/08/76
PERCENT OF AREA IN DEVELOPMENT STAGE BY SPECIFIED DATE FOR
TEXAS CRD 4 AVERAGE CROP CALENDARS FOR 1964-66 AND 1971-73

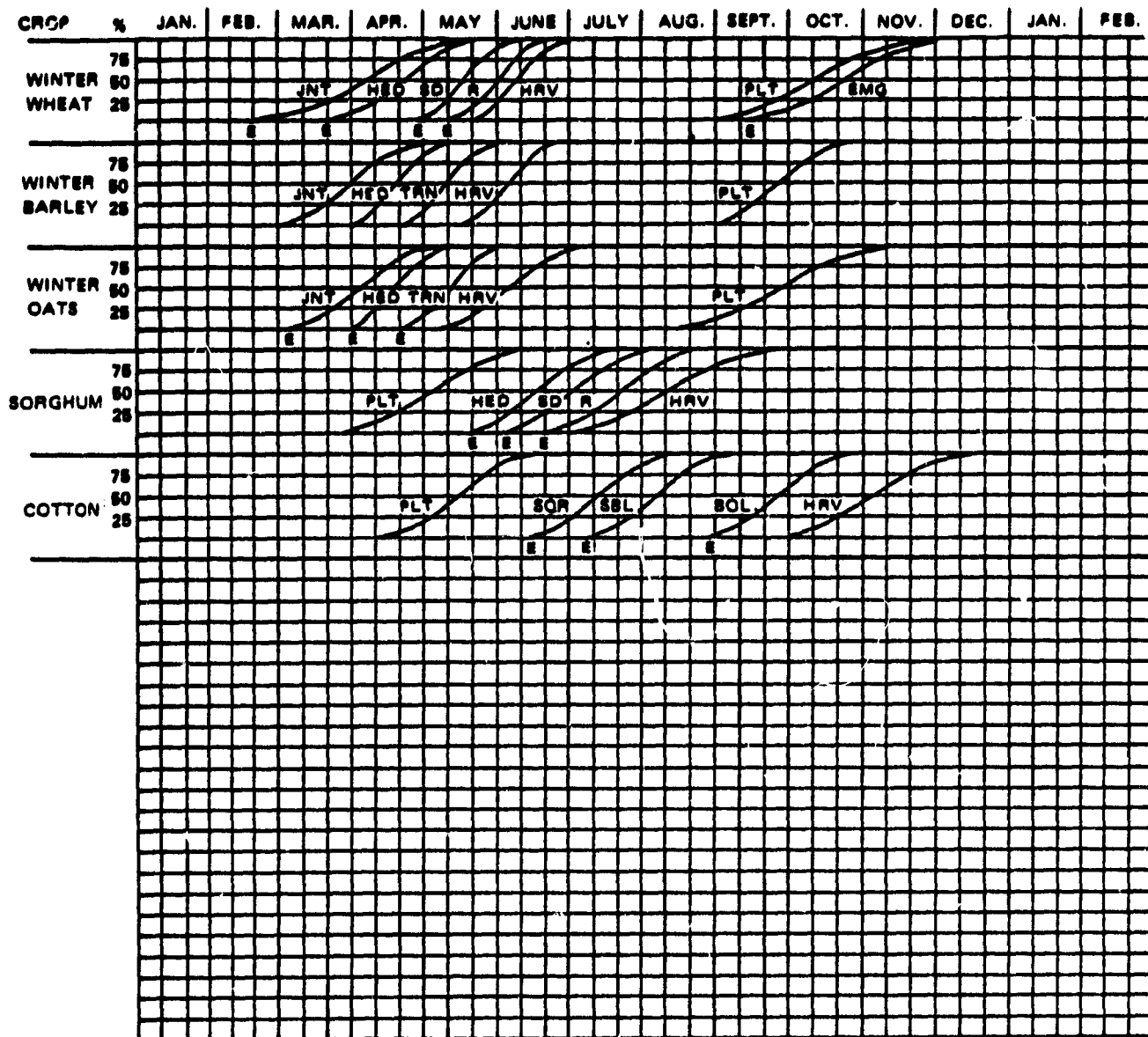


LEGEND

E	Under stage name, indicates rough estimate of date
EMG	Emergence
HED	Heading
HRV	Harvest
JNT	Jointing
PLT	Planting
R	Ripe
SD	Soft dough
TRN	Turning
TAS	Tasseling
C	Cut
FLR	Flowering
SQR	Squaring
SBL	Soft boll
BOL	Bolling

ORIGINAL PAGE IS
OF POOR QUALITY

CROP CALENDARS PLOTTED 01/06/76
PERCENT OF AREA IN DEVELOPMENT STAGE BY SPECIFIED DATE FOR
TEXAS CRD 7 AVERAGE CROP CALENDARS FOR 1964-66 AND 1971-73

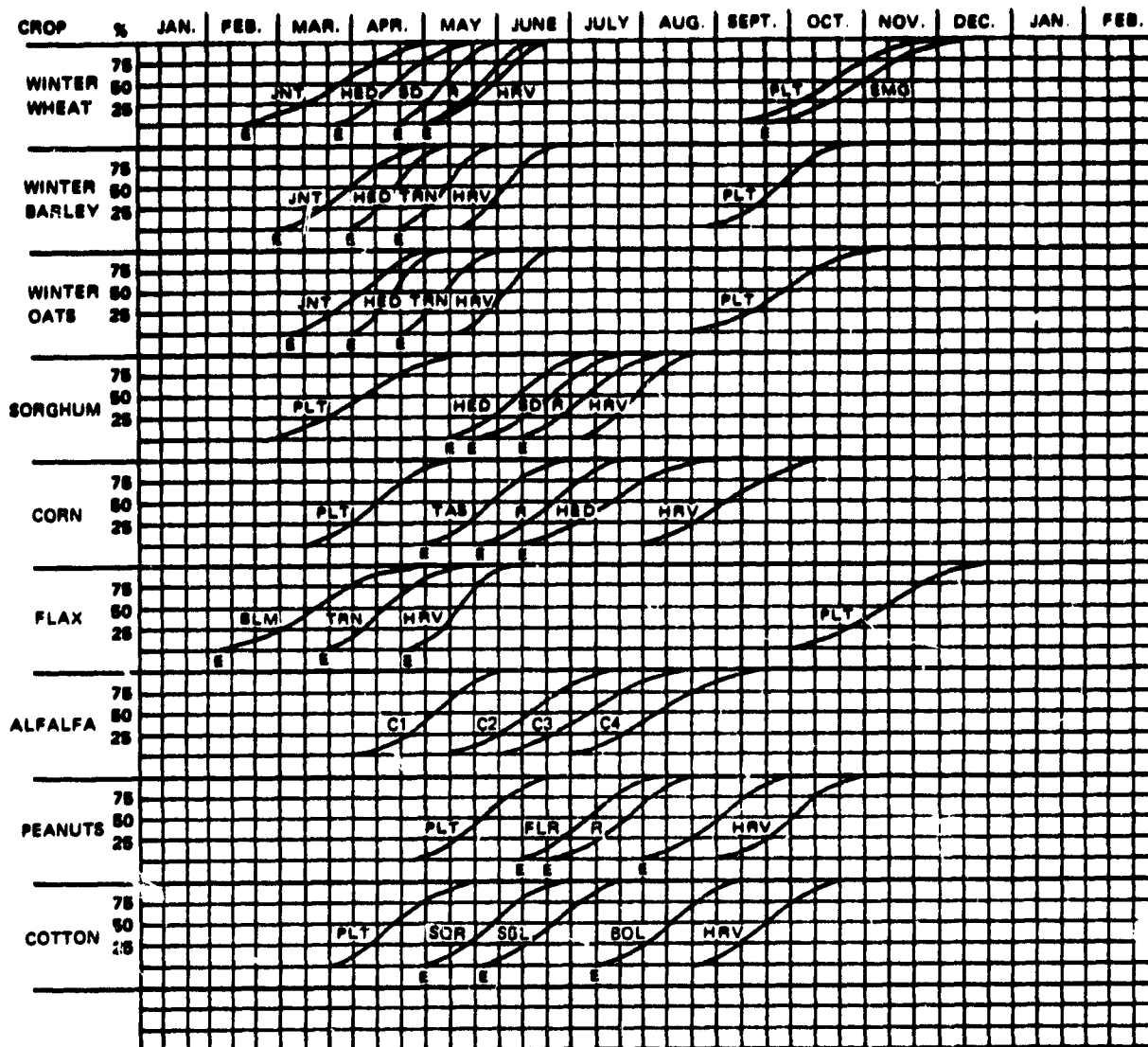


LEGEND

E Under stage name, indicates rough estimate of date
 EMG Emergence
 HED Heading
 HRV Harvest
 JNT Jointing
 PLT Planting
 R Ripe
 SD Soft dough
 TRN Turning
 SQR Squaring
 SBL Soft bolling
 BOL Bolling

ORIGINAL PAGE IS
OF POOR QUALITY

CROP CALENDARS PLOTTED 01/06/78
PERCENT OF AREA IN DEVELOPMENT STAGE BY SPECIFIED DATE FOR
TEXAS CROPS AVERAGE CROP CALENDARS FOR 1964-66 AND 1971-73

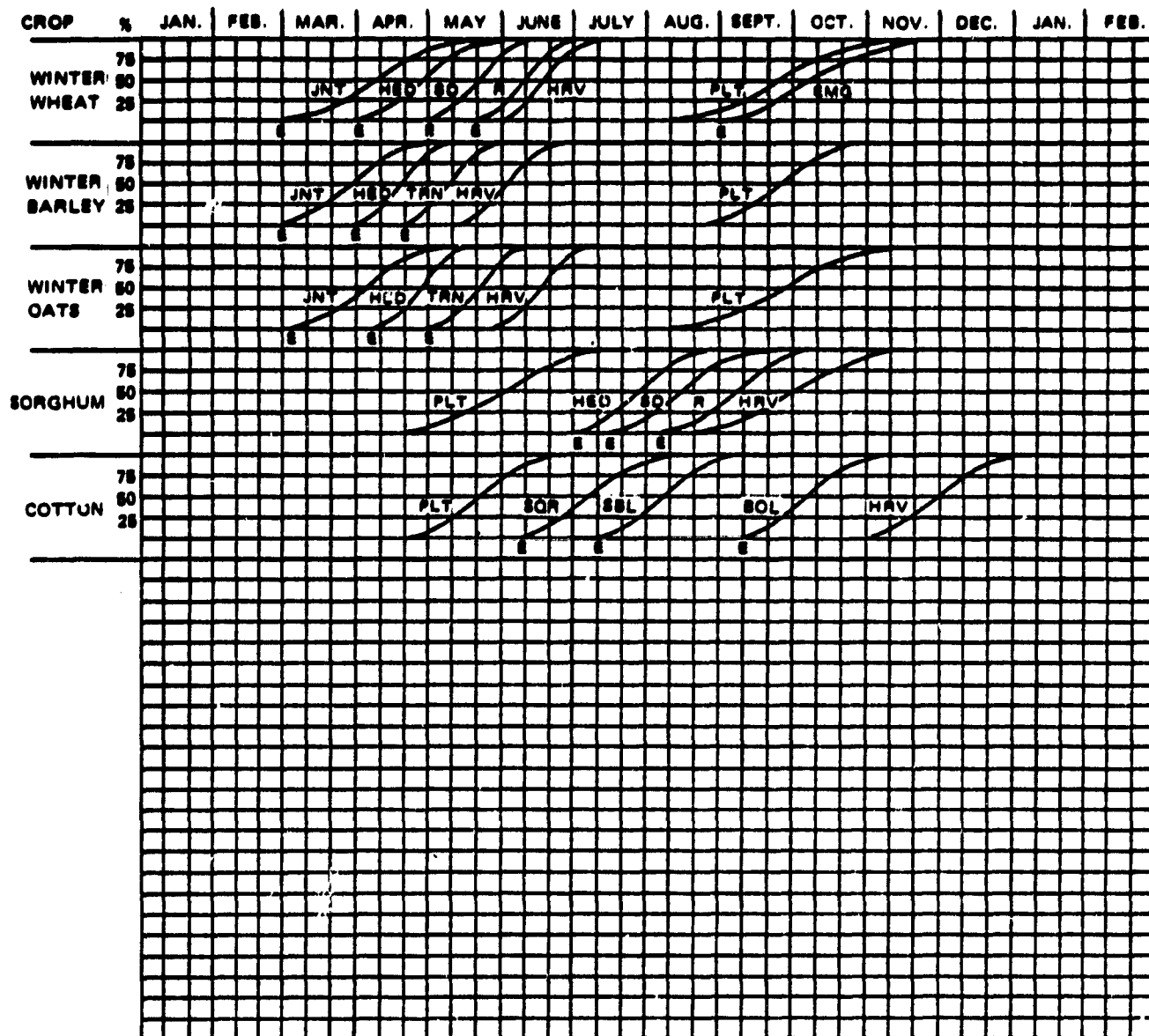


LEGEND

E Under stage name, indicates rough estimate of date
EMG Emergence
HED Heading
HRV Harvest
JNT Jointing
PLT Planting
R Ripe
SD Soft dough
TRN Turning
TAS Tasseling
C Cut
BLM Blooming
C Cut
FLR Flowering
SQR Squaring
SBL Soft boll
BOL Bolling

ORIGINAL PAGE IS
OF POOR QUALITY

CROP CALENDARS PLOTTED 01/08/78
PERCENT OF AREA IN DEVELOPMENT STAGE BY SPECIFIED DATE FOR
TEXAS CRD 11 AVERAGE CROP CALENDARS FOR 1964-66 AND 1971-73

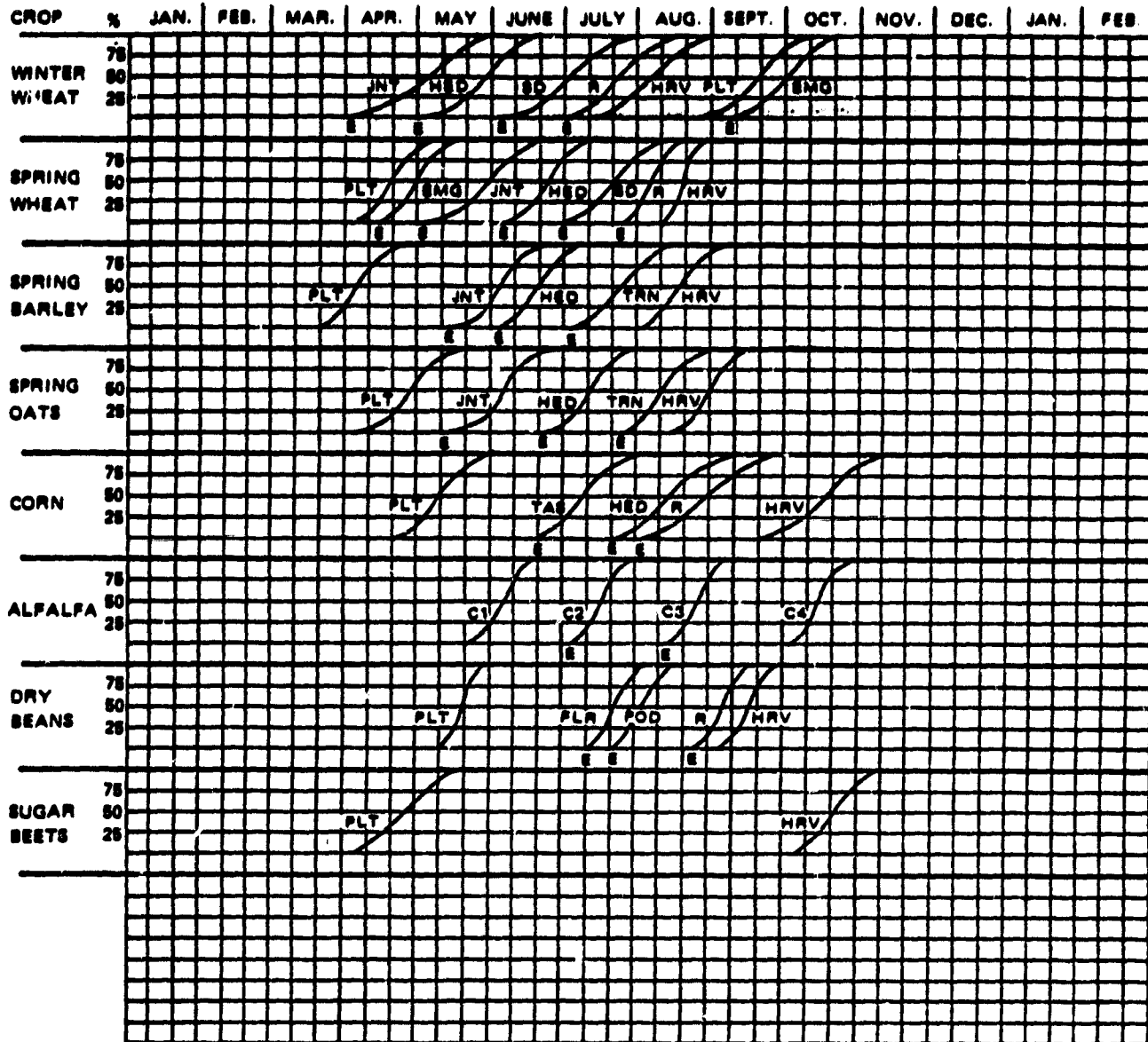


LEGEND

E Under stage name, indicates rough estimate of date
EMG Emergence
HED Heading
HARV Harvest
JNT Jointing
PLT Planting
R Ripe
SD Soft dough
TRN Turning
SQR Squaring
SBL Soft bolling
SOL Bolling

ORIGINAL PAGE IS
OF POOR QUALITY

CROP CALENDARS PLOTTED 01/08/78
PERCENT OF AREA IN DEVELOPMENT STAGE BY SPECIFIED DATE FOR
UTAH CRD 1 ESTIMATED AVERAGE CROP CALENDARS FROM USDA BULLETIN 283

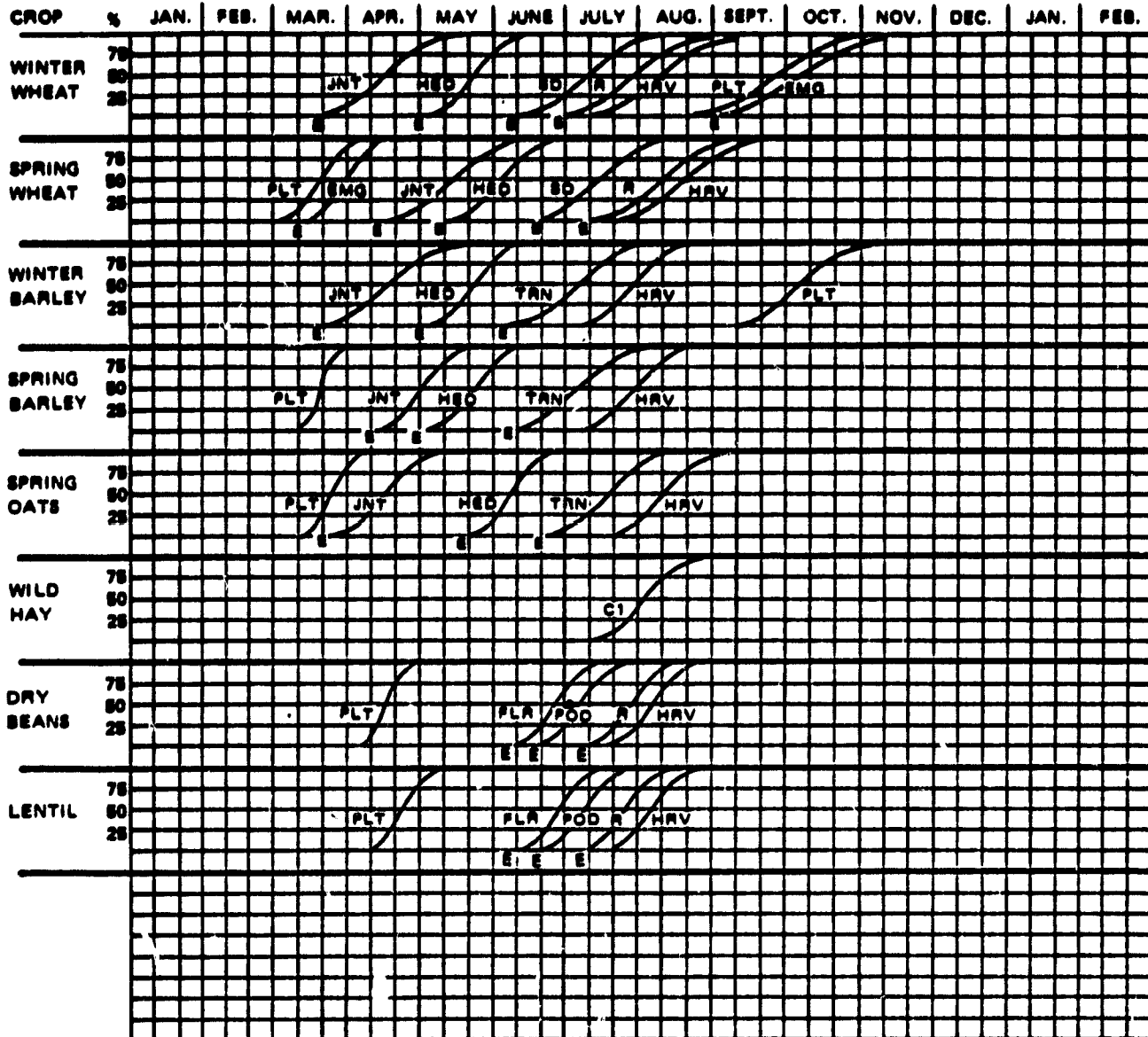


LEGEND

E Under stage name, indicates rough estimate of date
EMG Emergence
HED Heading
HRV Harvest
JNT Jointing
PLT Planting
R Ripe
SD Soft dough
TRN Turning
TAS Tasseling
C Cut
FLR Flowering

ORIGINAL PAGE IS
OF POOR QUALITY

CROP CALENDARS PLOTTED 01/08/78
PERCENT OF AREA IN DEVELOPMENT STAGE BY SPECIFIED DATE FOR
WASHINGTON CRO 3 ESTIMATED AVERAGE CROP CALENDARS FROM USDA BULLETIN 283

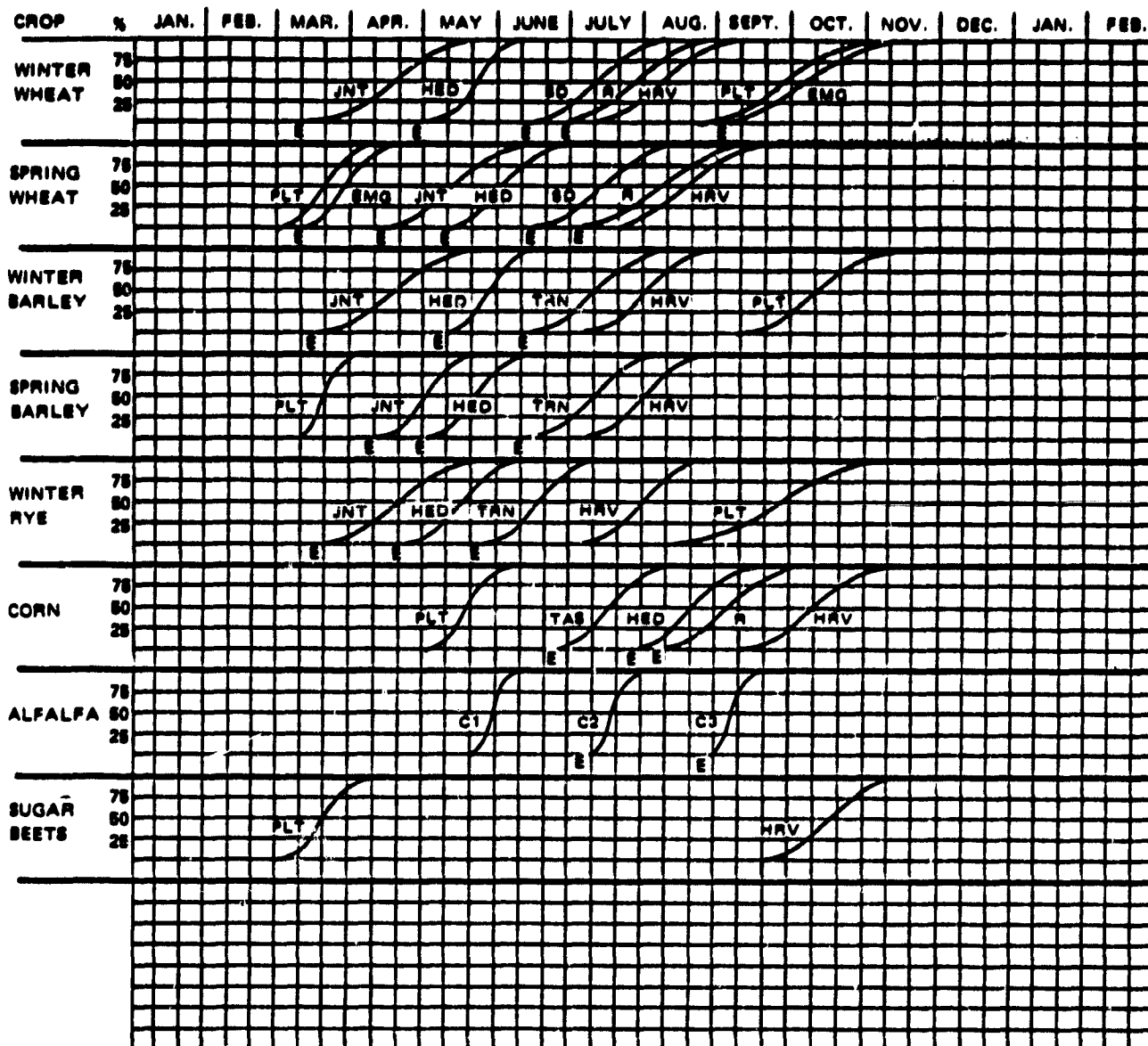


LEGEND

- E Under stage name, indicates rough estimate of date
- EMG Emergence
- HED Heading
- HRV Harvest
- JNT Jointing
- PLT Planting
- R Ripe
- SD Soft dough
- TRN Turning

ORIGINAL PAGE IS
OF POOR QUALITY

CROP CALENDARS PLOTTED 01/06/78
PERCENT OF AREA IN DEVELOPMENT STAGE BY SPECIFIED DATE FOR
WASHINGTON CRO 5 ESTIMATED AVERAGE CROP CALENDARS FROM USDA BULLETIN 203

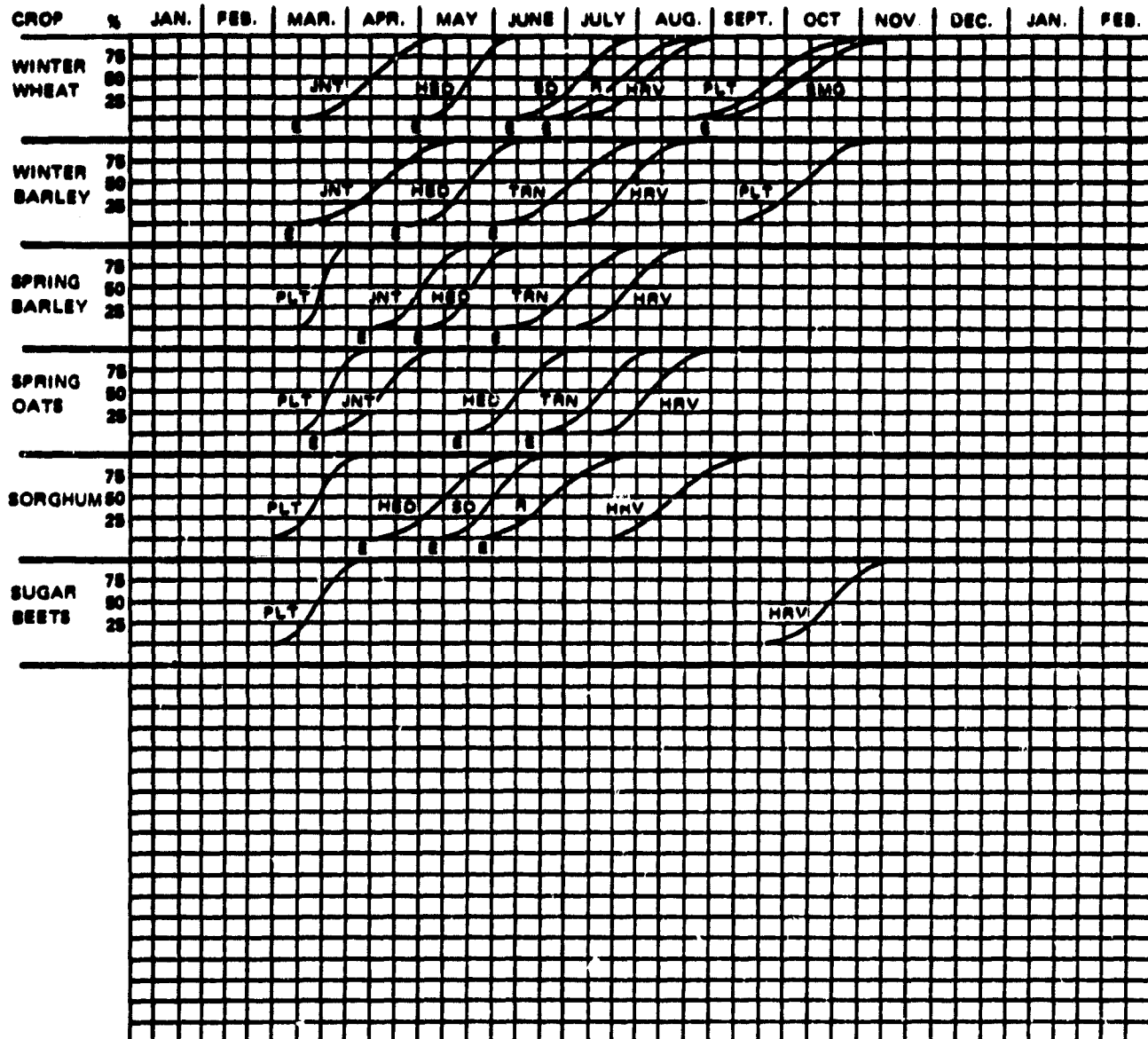


LEGEND

E Under stage name, indicates rough estimate of date
EMG Emergence
HED Heading
HRV Harvest
JNT Jointing
PLT Planting
R Ripe
SD Soft dough
TRN Turning
TAS Tasseling

ORIGINAL PAGE IS
OF POOR QUALITY

CROP CALENDARS PLOTTED 01/08/78
PERCENT OF AREA IN DEVELOPMENT STAGE BY SPECIFIED DATE FOR
WASHINGTON CRD 9 ESTIMATED AVERAGE CROP CALENDARS FROM USDA BULLETIN 283



LEGEND

E Under stage name, indicates rough estimate of date
EMG Emergence
HED Heading
HRV Harvest
INT Jointing
PLT Planting
R Ripe
SD Soft dough
TRN Turning

APPENDIX B

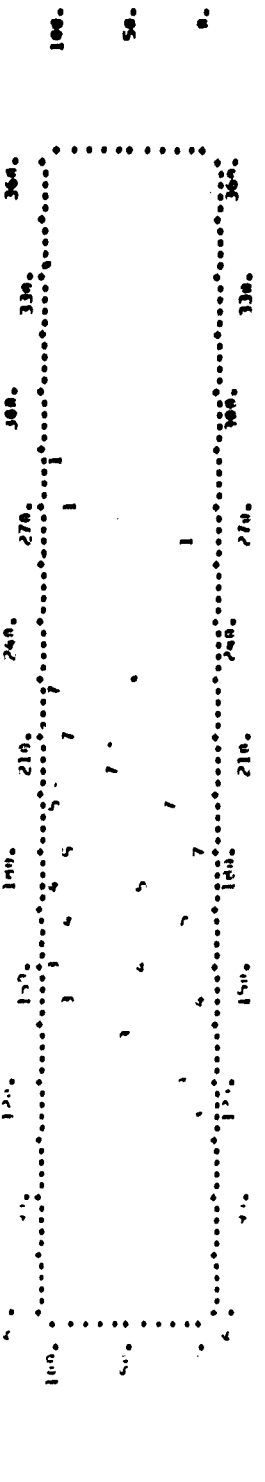
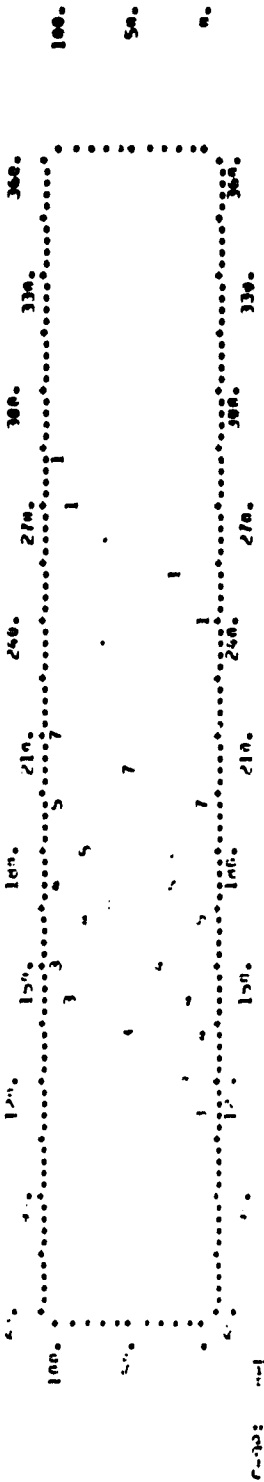
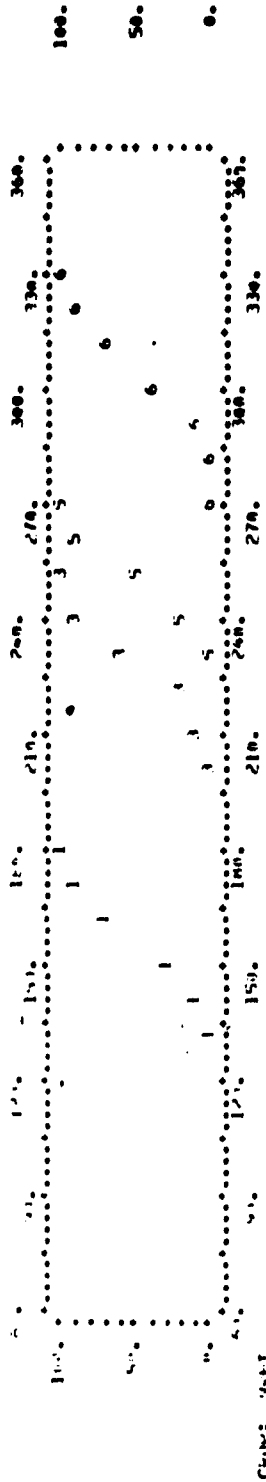
**SAMPLES OF CROP CALENDARS FOR COLORADO, IOWA, KANSAS, MINNESOTA, MONTANA,
NEBRASKA, NORTH DAKOTA, SOUTH DAKOTA, AND TEXAS**

ORIGINAL PAGE IS
OF POOR QUALITY

PAGE 1

UNITED STATES DEPARTMENT OF AGRICULTURE

(Revised 1954)



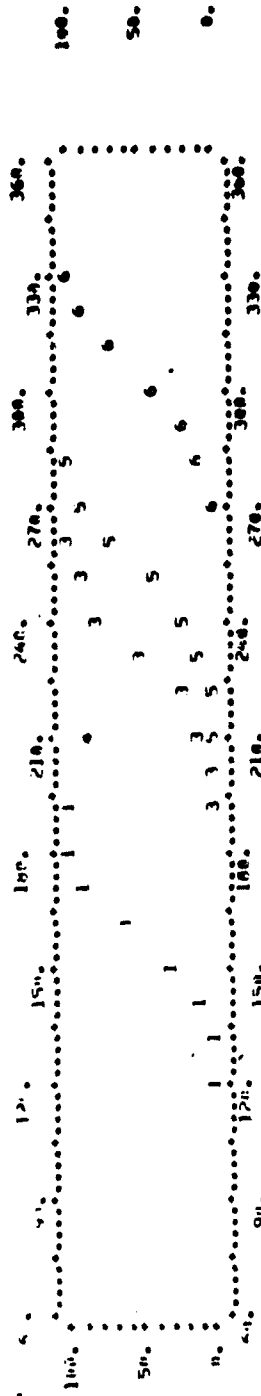
1-2

ORIGINAL PAGE IS
OF POOR QUALITY

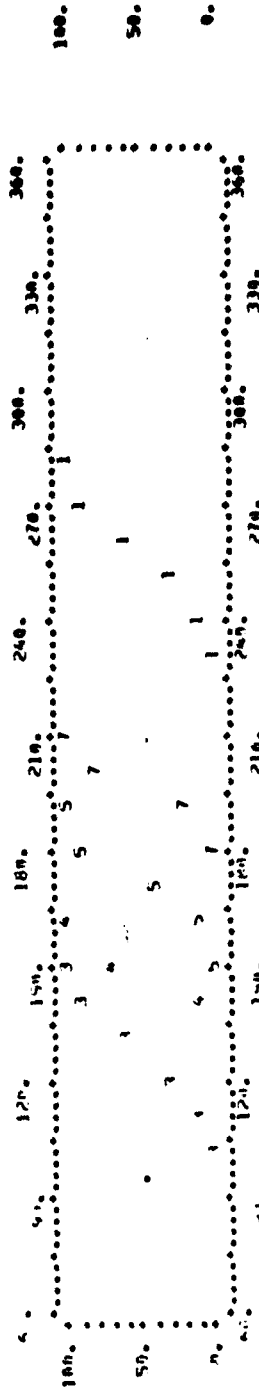
PAGE 1

AGRICULTURAL PLOTS FOR STATE TO CDD

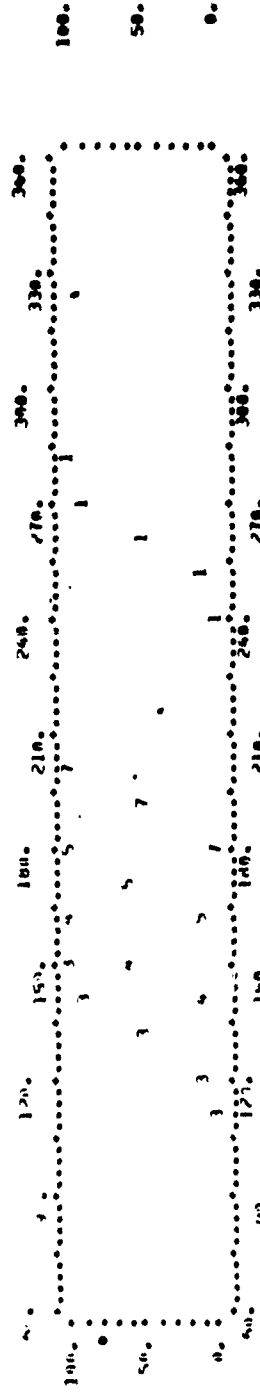
CE-102: 50000



CE-102: 40000



CE-102: 30000

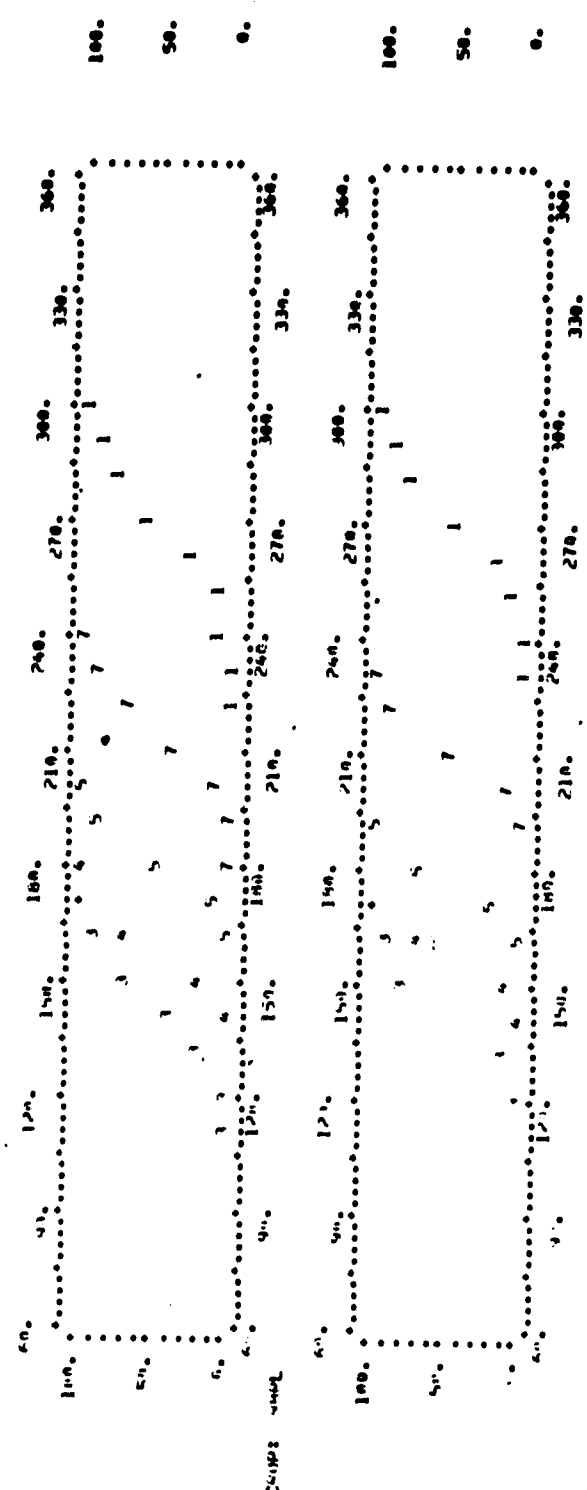


ORIGINAL PAGE IS
OF POOR QUALITY

PAGE 1

WIND SPEED CORRELATION DATA FOR STATION CO CODE 7

CHART: WIND

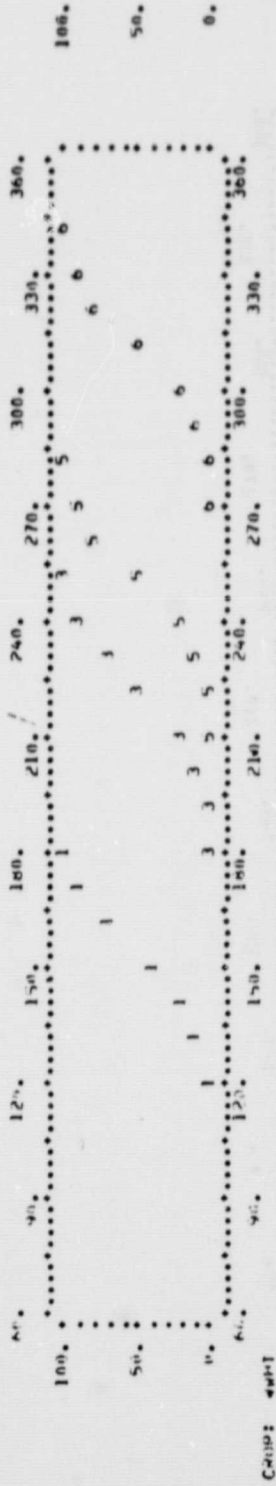


ORIGINAL PAGE IS
OF POOR QUALITY

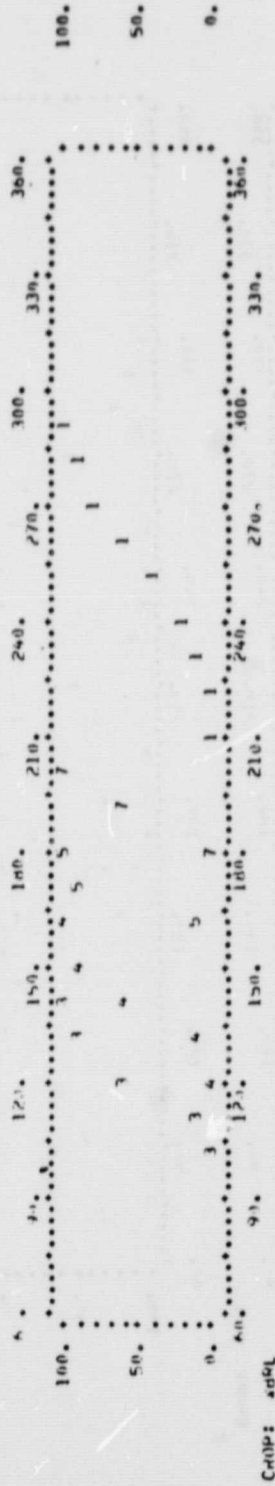
PAGE 1

ANNUAL CROP-CALFARAW PLOTS FOR STATE: CO C40: 9

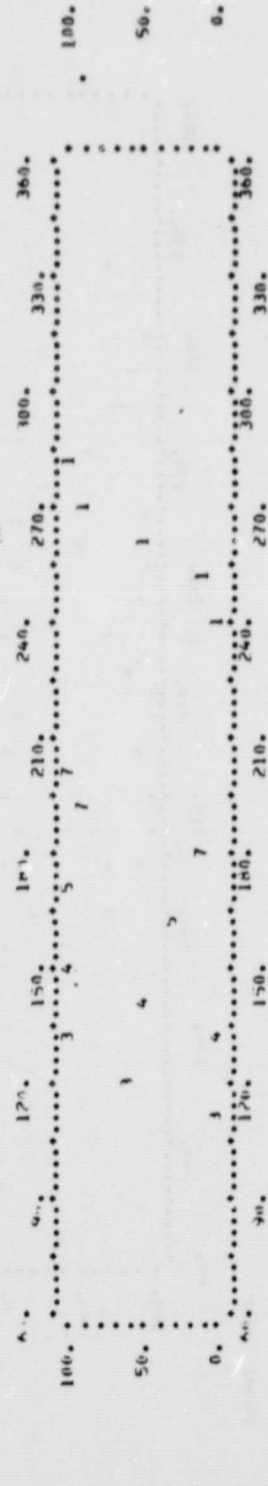
Crop: 5006



Crop: 4001



Crop: 4001



APPENDIX C

SAMPLE OF STATISTICAL TREATMENT OF CROP CALENDAR DATA FOR STATES WITH
WEEKLY DATA: IOWA, KANSAS, MINNOSATA, MONTANA, NEBRASKA,
NORTH DAKOTA, SOUTH DAKOTA, AND TEXAS

ORIGINAL PAGE IS
OF POOR QUALITY

STATE	CRD	CROP	STAGE	YEAR	LOGISTIC CURVE	90%
A	2	1	1	66	10 %	129.
A	2	1	1	67	11 %	125.
A	2	1	1	68	11 %	124.
A	2	1	1	69	11 %	124.
A	2	1	1	70	11 %	124.
A	2	1	1	71	11 %	124.
A	2	1	1	72	11 %	124.
A	2	1	1	73	11 %	124.
A	2	1	1	74	11 %	124.
A	2	1	1	75	11 %	124.
STATE	CRD	CROP	STAGE	YEAR	LOGISTIC CURVE	90%
A	2	1	1	66	10 %	129.
A	2	1	1	67	11 %	125.
A	2	1	1	68	11 %	124.
A	2	1	1	69	11 %	124.
A	2	1	1	70	11 %	124.
A	2	1	1	71	11 %	124.
A	2	1	1	72	11 %	124.
A	2	1	1	73	11 %	124.
A	2	1	1	74	11 %	124.
A	2	1	1	75	11 %	124.
STATE	CRD	CROP	STAGE	YEAR	LOGISTIC CURVE	90%
A	2	1	1	66	10 %	129.
A	2	1	1	67	11 %	125.
A	2	1	1	68	11 %	124.
A	2	1	1	69	11 %	124.
A	2	1	1	70	11 %	124.
A	2	1	1	71	11 %	124.
A	2	1	1	72	11 %	124.
A	2	1	1	73	11 %	124.
A	2	1	1	74	11 %	124.
A	2	1	1	75	11 %	124.
STATE	CRD	CROP	STAGE	YEAR	LOGISTIC CURVE	90%
A	2	1	1	66	10 %	129.
A	2	1	1	67	11 %	125.
A	2	1	1	68	11 %	124.
A	2	1	1	69	11 %	124.
A	2	1	1	70	11 %	124.
A	2	1	1	71	11 %	124.
A	2	1	1	72	11 %	124.
A	2	1	1	73	11 %	124.
A	2	1	1	74	11 %	124.
A	2	1	1	75	11 %	124.
STATE	CRD	CROP	STAGE	YEAR	LOGISTIC CURVE	90%
A	2	1	1	66	10 %	129.
A	2	1	1	67	11 %	125.
A	2	1	1	68	11 %	124.
A	2	1	1	69	11 %	124.
A	2	1	1	70	11 %	124.
A	2	1	1	71	11 %	124.
A	2	1	1	72	11 %	124.
A	2	1	1	73	11 %	124.
A	2	1	1	74	11 %	124.
A	2	1	1	75	11 %	124.
STATE	CRD	CROP	STAGE	YEAR	LOGISTIC CURVE	90%
A	2	1	1	66	10 %	129.
A	2	1	1	67	11 %	125.
A	2	1	1	68	11 %	124.
A	2	1	1	69	11 %	124.
A	2	1	1	70	11 %	124.
A	2	1	1	71	11 %	124.
A	2	1	1	72	11 %	124.
A	2	1	1	73	11 %	124.
A	2	1	1	74	11 %	124.
A	2	1	1	75	11 %	124.

Colorado

APPENDIX D

FIFTY-PERCENT DATES FOR STAGES FOR ARKANSAS,
IOWA, KENTUCKY, LOUISIANA, MICHIGAN, MISSISSIPPI,
OHIO, AND WISCONSIN

ORIGINAL PAGE IS
OF POOR QUALITY

CROP	STAGE	STATE	CRD	MEAN	STD DEV
W	1.0	5		158.	10.4
W	1.0	5	2	153.	16.7
W	1.0	5	3	158.	9.6
W	1.0	5	4	154.	5.9
W	1.0	5	5	158.	7.6
W	1.0	5	6	159.	14.3
W	1.0	5	7	151.	16.9
W	1.0	5	8	154.	3.6
W	1.0	5	9	159.	9.6
W	1.0	5	10	158.	6.4

CROP	STAGE	STATE	CRD	MEAN	STD DEV
W	7.0	5		312.	9.2
W	7.0	5	2	312.	14.3
W	7.0	5	3	312.	10.0
W	7.0	5	4	316.	11.2
W	7.0	5	5	312.	8.3
W	7.0	5	6	311.	7.1
W	7.0	5	7	313.	10.5
W	7.0	5	8	309.	7.7
W	7.0	5	9	313.	7.8
W	7.0	5	10	312.	7.8

CROP	STAGE	STATE	CRD	MEAN	STD DEV
4	1.0	5		133.	16.7
4	1.0	5	2	154.	9.3
4	1.0	5	3	123.	5.7
4	1.0	5	4	121.	6.2
4	1.0	5	5	135.	23.6
4	1.0	5	6	124.	7.8
4	1.0	5	7	138.	15.0
4	1.0	5	8	137.	19.9
4	1.0	5	10	133.	8.1

CROP	STAGE	STATE	CRD	MEAN	STD DEV
4	6.0	5		275.	14.7
4	6.0	5	2	276.	20.4
4	6.0	5	3	270.	10.5
4	6.0	5	4	264.	8.4
4	6.0	5	5	281.	19.4
4	6.0	5	6	274.	12.4
4	6.0	5	7	271.	11.3
4	6.0	5	8	284.	15.8
4	6.0	5	10	275.	12.1

Arkansas

ORIGINAL PAGE IS
OF POOR QUALITY

CROP	STAGE	STATE	CRD	MEAN	STD DEV
B	1.0	S		297.	13.1
B	1.0	S	2	287.	15.9
B	1.0	S	3	301.	15.1
B	1.0	S	4	291.	9.2
B	1.0	S	5	304.	11.7
B	1.0	S	6	304.	14.4
B	1.0	S	7	290.	10.4
B	1.0	S	8	306.	16.8
B	1.0	S	9	297.	15.2
B	1.0	S	10	297.	9.9

CROP	STAGE	STATE	CRD	MEAN	STD DEV
B	7.0	S		177.	12.5
B	7.0	S	2	179.	11.2
B	7.0	S	3	181.	14.3
B	7.0	S	4	178.	11.9
B	7.0	S	5	176.	12.9
B	7.0	S	6	178.	11.9
B	7.0	S	7	176.	16.9
B	7.0	S	8	175.	17.4
B	7.0	S	9	174.	10.6
B	7.0	S	10	177.	13.2

CROP	STAGE	STATE	CRD	MEAN	STD DEV
Q	1.0	S		123.	7.2
Q	1.0	S	3	120.	3.3
Q	1.0	S	4	121.	6.2
Q	1.0	S	5	131.	5.4
Q	1.0	S	6	119.	4.2
Q	1.0	S	7	124.	6.0
Q	1.0	S	8	124.	9.0
Q	1.0	S	9	121.	10.1
Q	1.0	S	10	123.	3.0

CROP	STAGE	STATE	CRD	MEAN	STD DEV
Q	7.0	S		280.	5.7
Q	7.0	S	3	280.	5.5
Q	7.0	S	4	283.	5.1
Q	7.0	S	5	275.	5.1
Q	7.0	S	6	277.	6.4
Q	7.0	S	7	283.	8.3
Q	7.0	S	8	281.	4.9
Q	7.0	S	9	278.	4.3
Q	7.0	S	10	280.	4.5

Arkansas

ORIGINAL PAGE IS
OF POOR QUALITY

CROP	STAGE	STATE	CRD	MEAN	STD DEV
10	1.0	5		134.	7.6
10	1.0	5	3	133.	7.2
10	1.0	5	4	133.	7.7
10	1.0	5	5	137.	9.5
10	1.0	5	6	134.	9.4
10	1.0	5	7	137.	9.4
10	1.0	5	8	134.	7.3
10	1.0	5	9	134.	5.3
10	1.0	5	10	134.	6.5

CROP	STAGE	STATE	CRD	MEAN	STD DEV
10	4.0	5		210.	12.2
10	4.0	5	3	207.	16.0
10	4.0	5	4	211.	14.6
10	4.0	5	5	214.	15.9
10	4.0	5	6	208.	10.6
10	4.0	5	7	211.	10.6
10	4.0	5	8	211.	11.1
10	4.0	5	9	208.	12.0
10	4.0	5	10	210.	12.3

CROP	STAGE	STATE	CRD	MEAN	STD DEV
10	5.0	5		275.	11.8
10	5.0	5	3	271.	17.2
10	5.0	5	4	280.	11.9
10	5.0	5	5	270.	9.2
10	5.0	5	6	273.	12.5
10	5.0	5	7	280.	11.6
10	5.0	5	8	274.	12.8
10	5.0	5	9	277.	9.3
10	5.0	5	10	275.	11.4

CROP	STAGE	STATE	CRD	MEAN	STD DEV
10	6.0	5		304.	11.4
10	6.0	5	3	299.	14.3
10	6.0	5	4	304.	8.8
10	6.0	5	5	303.	13.0
10	6.0	5	6	304.	12.3
10	6.0	5	7	311.	12.3
10	6.0	5	8	301.	9.5
10	6.0	5	9	305.	13.2
10	6.0	5	10	304.	10.5

Arkansas

ORIGINAL PAGE IS
OF POOR QUALITY

CROP	STAGE	STATE	CRD	MEAN	STD DEV
	0.0	19	1	103.	7.5
	0.0	00	2	100.	5.5
	0.0	00	3	104.	4.5
	0.0	00	4	108.	4.0
	0.0	00	5	103.	0.5
	0.0	00	6	110.	2.4
	0.0	00	7	107.	1.2
	0.0	00	8	109.	4.2
	0.0	19	9	105.	2.0

CROP	STAGE	STATE	CRD	MEAN	STD DEV
	1.0	19	1	132.	4.0
	1.0	00	2	132.	5.5
	1.0	00	3	135.	5.5
	1.0	00	4	132.	5.1
	1.0	00	5	133.	5.9
	1.0	00	6	136.	6.2
	1.0	00	7	133.	6.6
	1.0	00	8	135.	6.4
	1.0	19	9	136.	7.3

CROP	STAGE	STATE	CRD	MEAN	STD DEV
	3.0	19	1	205.	5.9
	3.0	00	2	215.	3.9
	3.0	00	3	210.	5.1
	3.0	00	4	215.	3.9
	3.0	00	5	203.	4.9
	3.0	00	6	207.	4.8
	3.0	00	7	205.	4.2
	3.0	00	8	215.	4.2
	3.0	19	9	205.	6.0

CROP	STAGE	STATE	CRD	MEAN	STD DEV
	4.0	19	1	240.	1.4
	4.0	00	2	249.	2.8
	4.0	00	3	251.	2.8
	4.0	00	4	245.	1.4
	4.0	00	5	244.	0.7
	4.0	00	6	251.	4.2
	4.0	00	7	245.	0.7
	4.0	00	8	250.	2.8
	4.0	19	9	251.	0.0

Iowa

ORIGINAL PAGE IS
OF POOR QUALITY

CROP	STAGE	STATE	CRD	MEAN	STD DEV
1	5.0	19	1	257.	6.0
1	5.0	19	2	259.	5.8
1	5.0	19	3	258.	4.6
1	5.0	19	4	258.	4.5
1	5.0	19	5	257.	5.2
1	5.0	19	6	257.	5.5
1	5.0	19	7	256.	4.1
1	5.0	19	8	256.	5.6
1	5.0	19	9	257.	6.1

CROP	STAGE	STATE	CRD	MEAN	STD DEV
1	6.0	19	1	308. 176	10.3
1	6.0	19	2	310. 179	8.2
1	6.0	19	3	312. 177	8.4
1	6.0	19	4	308. 174	11.5
1	6.0	19	5	309. 177	8.7
1	6.0	19	6	310. 174	9.4
1	6.0	19	7	310. 177	11.2
1	6.0	19	8	312. 177	8.9
1	6.0	19	9	309. 172	7.5

CROP	STAGE	STATE	CRD	MEAN	STD DEV
2	0.0	19	1	103.	7.5
2	0.0	19	2	100.	5.5
2	0.0	19	3	109.	8.8
2	0.0	19	4	108.	9.0
2	0.0	19	5	103.	10.6
2	0.0	19	6	110.	12.4
2	0.0	19	7	107.	14.2
2	0.0	19	8	109.	19.8
2	0.0	19	9	105.	22.0

CROP	STAGE	STATE	CRD	MEAN	STD DEV
2	1.0	19	1	145.	3.4
2	1.0	19	2	147.	5.5
2	1.0	19	3	151.	4.6
2	1.0	19	4	146.	4.8
2	1.0	19	5	145.	7.1
2	1.0	19	6	150.	7.8
2	1.0	19	7	146.	5.3
2	1.0	19	8	150.	7.5
2	1.0	19	9	151.	7.8

Iowa

ORIGINAL PAGE IS
OF POOR QUALITY

CROP	STAGE	STATE	CRD	MEAN	STD DEV
W	3	10	1	216.	5.0
W	3	10	2	213.	5.5
W	3	10	3	225.	5.0
W	3	10	4	217.	5.0
W	3	10	5	214.	5.0
W	3	10	6	222.	5.5
W	3	10	7	217.	5.5
W	3	10	8	222.	5.5
W	3	10	9	215.	7.4

CROP	STAGE	STATE	CRD	MEAN	STD DEV
W	6	10	1	288.	8.7
W	6	10	2	292.	5.5
W	6	10	3	292.	5.7
W	6	10	4	292.	5.3
W	6	10	5	292.	5.7
W	6	10	6	292.	5.3
W	6	10	7	292.	8.0
W	6	10	8	296.	4.1
W	6	10	9	293.	6.9

CROP	STAGE	STATE	CRD	MEAN	STD DEV
W	1	10	1	108.	7.7
W	1	10	2	112.	7.5
W	1	10	3	111.	8.1
W	1	10	4	106.	7.5
W	1	10	5	106.	8.3
W	1	10	6	107.	8.0
W	1	10	7	105.	11.0
W	1	10	8	105.	16.2
W	1	10	9	108.	12.0

CROP	STAGE	STATE	CRD	MEAN	STD DEV
W	7	10	1	205.	5.2
W	7	10	2	210.	5.4
W	7	10	3	213.	5.5
W	7	10	4	204.	5.9
W	7	10	5	207.	5.4
W	7	10	6	209.	5.4
W	7	10	7	201.	6.7
W	7	10	8	204.	6.0
W	7	10	9	206.	6.3

Iowa

ORIGINAL PAGE IS
OF POOR QUALITY

CROP	STAGE	STATE	CRD	MEAN	STD DEV
1	1.0	21		134.	10.6
1	1.0	21	1	128.	13.9
1	1.0	21	2	134.	11.5
1	1.0	21	3	130.	10.5
1	1.0	21	4	140.	9.1
1	1.0	21	5	133.	8.1
1	1.0	21	6	139.	9.7
1	1.0	21	10	134.	9.9

CROP	STAGE	STATE	CRD	MEAN	STD DEV
1	3.0	21		200.	6.5
1	3.0	21	1	192.	2.2
1	3.0	21	2	196.	5.5
1	3.0	21	3	200.	7.5
1	3.0	21	4	203.	4.4
1	3.0	21	5	203.	5.5
1	3.0	21	6	203.	5.5
1	3.0	21	10	200.	4.7

CROP	STAGE	STATE	CRD	MEAN	STD DEV
1	3.5	21		219.	3.7
1	3.5	21	1	216.	2.4
1	3.5	21	2	216.	2.9
1	3.5	21	3	217.	2.4
1	3.5	21	4	223.	3.6
1	3.5	21	5	220.	3.5
1	3.5	21	6	220.	3.1
1	3.5	21	10	219.	2.4

CROP	STAGE	STATE	CRD	MEAN	STD DEV
1	4.0	21		245.	7.0
1	4.0	21	1	238.	10.2
1	4.0	21	2	243.	1.8
1	4.0	21	3	247.	5.0
1	4.0	21	4	249.	5.4
1	4.0	21	5	244.	8.1
1	4.0	21	6	249.	3.4
1	4.0	21	10	245.	4.2

Kentucky

ORIGINAL PAGE IS
OF POOR QUALITY

CROP	STAGE	STATE	CRD	MEAN	STD DEV
1	5.0	21		266.	6.6
1	5.0	21	1	261.	5.0
1	5.0	21	2	265.	8.1
1	5.0	21	3	265.	9.1
1	5.0	21	4	269.	4.7
1	5.0	21	5	269.	4.7
1	5.0	21	6	269.	4.7
1	5.0	21	10	266.	5.1

CROP	STAGE	STATE	CRD	MEAN	STD DEV
1	6.0	21		296.	9.2
1	6.0	21	1	283.	4.7
1	6.0	21	2	284.	6.5
1	6.0	21	3	297.	3.9
1	6.0	21	4	304.	3.9
1	6.0	21	5	298.	3.4
1	6.0	21	6	306.	2.1
1	6.0	21	10	296.	3.1

CROP	STAGE	STATE	CRD	MEAN	STD DEV
2	1.0	21		159.	7.1
2	1.0	21	1	163.	7.3
2	1.0	21	2	158.	7.1
2	1.0	21	3	160.	7.4
2	1.0	21	4	153.	8.1
2	1.0	21	5	160.	5.8
2	1.0	21	6	158.	6.5
2	1.0	21	10	159.	5.6

CROP	STAGE	STATE	CRD	MEAN	STD DEV
2	3.0	21		218.	7.9
2	3.0	21	1	217.	10.0
2	3.0	21	2	214.	7.1
2	3.0	21	3	221.	7.0
2	3.0	21	4	214.	8.0
2	3.0	21	5	220.	8.1
2	3.0	21	6	220.	8.1
2	3.0	21	10	218.	6.8

Kentucky

ORIGINAL PAGE IS
OF POOR QUALITY

CROP	STAGE	STATE	CRD	MEAN	STD DEV
2	4.0	21		227.	7.5
2	4.0	21	1	224.	6.9
2	4.0	21	2	226.	6.5
2	4.0	21	3	225.	6.0
2	4.0	21	4	223.	4.0
2	4.0	21	5	233.	9.2
2	4.0	21	6	234.	6.3
2	4.0	21	10	227.	5.4

CROP	STAGE	STATE	CRD	MEAN	STD DEV
2	5.0	21		281.	5.2
2	5.0	21	1	280.	3.9
2	5.0	21	2	279.	4.3
2	5.0	21	3	281.	1.9
2	5.0	21	4	281.	12.0
2	5.0	21	5	281.	1.9
2	5.0	21	6	281.	1.9
2	5.0	21	10	281.	2.4

CROP	STAGE	STATE	CRD	MEAN	STD DEV
2	6.0	21		305.	6.0
2	6.0	21	1	303.	6.3
2	6.0	21	2	300.	4.8
2	6.0	21	3	305.	3.8
2	6.0	21	4	307.	3.6
2	6.0	21	5	305.	6.0
2	6.0	21	6	312.	4.7
2	6.0	21	10	305.	3.7

Kentucky

ORIGINAL PAGE IS
OF POOR QUALITY

CROP	STAGE	STATE	CRD	MEAN	STD DEV
1	1.0	22		103.	8.0
1	1.0	22	1	105.	7.7
1	1.0	22	2	106.	6.2
1	1.0	22	3	102.	7.6
1	1.0	22	5	101.	9.8
1	1.0	22	6	104.	8.6
1	1.0	22	7	98.	9.4
1	1.0	22	10	103.	7.3

CROP	STAGE	STATE	CRD	MEAN	STD DEV
1	6.0	22		249.	12.0
1	6.0	22	1	255.	7.2
1	6.0	22	2	255.	16.8
1	6.0	22	3	240.	6.4
1	6.0	22	5	247.	8.9
1	6.0	22	6	258.	10.1
1	6.0	22	7	241.	11.3
1	6.0	22	10	249.	8.6

CROP	STAGE	STATE	CRD	MEAN	STD DEV
2	1.0	22		147.	9.0
2	1.0	22	1	143.	11.4
2	1.0	22	2	150.	14.2
2	1.0	22	3	145.	9.6
2	1.0	22	4	145.	6.4
2	1.0	22	5	143.	7.4
2	1.0	22	6	149.	4.5
2	1.0	22	7	151.	8.0
2	1.0	22	10	147.	8.2

CROP	STAGE	STATE	CRD	MEAN	STD DEV
2	6.0	22		296.	5.6
2	6.0	22	1	301.	4.9
2	6.0	22	2	295.	7.0
2	6.0	22	3	291.	4.9
2	6.0	22	4	300.	1.6
2	6.0	22	5	294.	3.1
2	6.0	22	6	299.	4.2
2	6.0	22	7	291.	3.2
2	6.0	22	10	296.	3.1

CROP	STAGE	STATE	CRD	MEAN	STD DEV
4	1.0	22		149.	13.2
4	1.0	22	3	149.	18.4
4	1.0	22	4	149.	7.4
4	1.0	22	10	149.	12.0

Louisiana

ORIGINAL PAGE IS
OF POOR QUALITY

CROP	STAGE	STATE	CRD	MEAN	STD DEV
4	6.0	22		266.	10.6
4	6.0	22	3	269.	11.5
4	6.0	22	4	264.	10.2
4	6.0	22	10	266.	9.7

CROP	STAGE	STATE	CRD	MEAN	STD DEV
9	1.0	22		109.	11.4
9	1.0	22	3	122.	10.8
9	1.0	22	5	108.	6.9
9	1.0	22	7	99.	5.1
9	1.0	22	8	108.	9.3
9	1.0	22	10	109.	2.9

CROP	STAGE	STATE	CRD	MEAN	STD DEV
9	7.0	22		244.	15.6
9	7.0	22	3	262.	11.7
9	7.0	22	5	243.	7.4
9	7.0	22	7	225.	3.7
9	7.0	22	8	244.	9.0
9	7.0	22	10	243.	4.9

CROP	STAGE	STATE	CRD	MEAN	STD DEV
10	1.0	22		126.	9.0
10	1.0	22	1	123.	11.6
10	1.0	22	2	127.	7.9
10	1.0	22	3	126.	9.4
10	1.0	22	4	127.	9.1
10	1.0	22	5	127.	10.2
10	1.0	22	10	126.	8.7

CROP	STAGE	STATE	CRD	MEAN	STD DEV
10	6.0	22		297.	8.8
10	6.0	22	1	297.	8.7
10	6.0	22	2	297.	9.2
10	6.0	22	3	297.	11.3
10	6.0	22	4	302.	10.2
10	6.0	22	5	293.	3.9
10	6.0	22	10	297.	8.3

Louisiana

ORIGINAL PAGE IS
OF POOR QUALITY

CROP	STAGE	STATE	CRD	MEAN	STD DEV
1	1.0	26		143.	5.5
1	1.0	26	1	141.	4.4
1	1.0	26	2	140.	5.8
1	1.0	26	3	148.	6.1
1	1.0	26	4	144.	6.6
1	1.0	26	5	140.	4.4
1	1.0	26	6	140.	4.8
1	1.0	26	7	143.	5.7
1	1.0	26	8	144.	2.2
1	1.0	26	9	147.	4.4
1	1.0	26	10	143.	3.5

CROP	STAGE	STATE	CRD	MEAN	STD DEV
1	3.0	26		214.	6.8
1	3.0	26	1	220.	7.3
1	3.0	26	2	217.	3.6
1	3.0	26	3	217.	4.4
1	3.0	26	4	214.	9.8
1	3.0	26	5	211.	6.9
1	3.0	26	6	211.	6.9
1	3.0	26	7	213.	7.3
1	3.0	26	8	213.	6.5
1	3.0	26	9	213.	7.3
1	3.0	26	10	214.	6.2

CROP	STAGE	STATE	CRD	MEAN	STD DEV
1	3.5	26		237.	6.8
1	3.5	26	1	248.	8.2
1	3.5	26	2	239.	6.9
1	3.5	26	3	235.	4.4
1	3.5	26	4	239.	6.9
1	3.5	26	5	231.	4.7
1	3.5	26	6	235.	4.7
1	3.5	26	7	235.	4.7
1	3.5	26	8	235.	4.7
1	3.5	26	9	236.	4.3
1	3.5	26	10	237.	4.2

CROP	STAGE	STATE	CRD	MEAN	STD DEV
1	4.0	26		255.	7.5
1	4.0	26	1	263.	5.7
1	4.0	26	2	260.	7.9
1	4.0	26	3	255.	3.8
1	4.0	26	4	257.	12.6
1	4.0	26	5	253.	7.9
1	4.0	26	6	253.	6.9
1	4.0	26	7	252.	4.4
1	4.0	26	8	252.	4.4
1	4.0	26	9	253.	6.9
1	4.0	26	10	255.	5.8

Michigan

ORIGINAL PAGE IS
OF POOR QUALITY

CROP	STAGE	STATE	CRD	MEAN	STD DEV
1	5.0	26		276.	6.5
1	5.0	26	2	281.	3.6
1	5.0	26	7	271.	6.3
1	5.0	26	8	276.	6.0
1	5.0	26	10	276.	3.7

CROP	STAGE	STATE	CRD	MEAN	STD DEV
1	6.0	26		308.	7.3
1	6.0	26	1	306.	6.3
1	6.0	26	2	309.	9.1
1	6.0	26	3	308.	11.2
1	6.0	26	4	308.	10.2
1	6.0	26	5	304.	9.1
1	6.0	26	6	309.	8.9
1	6.0	26	7	306.	4.3
1	6.0	26	8	307.	2.6
1	6.0	26	9	309.	5.2
1	6.0	26	10	308.	6.0

CROP	STAGE	STATE	CRD	MEAN	STD DEV
2	4.0	26		230.	7.7
2	4.0	26	4	231.	7.4
2	4.0	26	5	232.	8.5
2	4.0	26	6	227.	9.4
2	4.0	26	7	229.	8.6
2	4.0	26	8	228.	8.0
2	4.0	26	9	232.	6.6
2	4.0	26	10	230.	7.2

CROP	STAGE	STATE	CRD	MEAN	STD DEV
2	5.0	26		268.	8.1
2	5.0	26	4	256.	6.3
2	5.0	26	5	274.	7.9
2	5.0	26	6	270.	4.7
2	5.0	26	7	273.	4.8
2	5.0	26	8	259.	4.7
2	5.0	26	9	267.	6.4
2	5.0	26	10	268.	1.8

CROP	STAGE	STATE	CRD	MEAN	STD DEV
2	6.0	26		299.	7.7
2	6.0	26	4	300.	10.4
2	6.0	26	5	297.	5.7
2	6.0	26	6	305.	11.0
2	6.0	26	7	301.	4.4
2	6.0	26	8	295.	5.8
2	6.0	26	9	295.	4.0
2	6.0	26	10	299.	5.6

Michigan

ORIGINAL PAGE IS
OF POOR QUALITY

CROP	STAGE	STATE	CRD	MEAN	STD DEV
S	1.0	26		126.	9.3
S	1.0	26	1	136.	5.0
S	1.0	26	2	129.	7.3
S	1.0	26	3	126.	9.1
S	1.0	26	4	124.	9.6
S	1.0	26	5	126.	11.0
S	1.0	26	6	124.	10.6
S	1.0	26	7	122.	9.2
S	1.0	26	8	124.	10.6
S	1.0	26	9	124.	10.6
S	1.0	26	10	126.	8.8

CROP	STAGE	STATE	CRD	MEAN	STD DEV
S	4.0	26		184.	7.2
S	4.0	26	1	196.	4.4
S	4.0	26	2	189.	3.6
S	4.0	26	3	189.	4.8
S	4.0	26	4	183.	7.2
S	4.0	26	5	182.	4.8
S	4.0	26	6	182.	4.8
S	4.0	26	7	178.	5.0
S	4.0	26	8	180.	7.3
S	4.0	26	9	182.	4.8
S	4.0	26	10	184.	4.5

CROP	STAGE	STATE	CRD	MEAN	STD DEV
S	7.0	26		224.	8.0
S	7.0	26	1	235.	9.4
S	7.0	26	2	228.	4.7
S	7.0	26	3	229.	8.0
S	7.0	26	4	224.	8.9
S	7.0	26	5	234.	8.9
S	7.0	26	6	221.	6.0
S	7.0	26	7	220.	4.3
S	7.0	26	8	220.	4.3
S	7.0	26	9	220.	4.3
S	7.0	26	10	224.	4.9

CROP	STAGE	STATE	CRD	MEAN	STD DEV
B	1.0	26		274.	7.9
B	1.0	26	1	268.	7.6
B	1.0	26	2	268.	2.4
B	1.0	26	3	265.	3.0
B	1.0	26	4	274.	5.2
B	1.0	26	5	277.	11.2
B	1.0	26	6	278.	6.2
B	1.0	26	7	280.	2.4
B	1.0	26	8	280.	6.4
B	1.0	26	9	280.	6.7
B	1.0	26	10	274.	3.2

Michigan

ORIGINAL PAGE IS
OF POOR QUALITY

CROP	STAGE	STATE	CRD	MEAN	STD DEV
8	4.0	26		165.	8.2
8	4.0	26	1	179.	6.0
8	4.0	26	2	165.	6.0
8	4.0	26	3	166.	7.1
8	4.0	26	4	165.	6.0
8	4.0	26	5	164.	9.0
8	4.0	26	6	165.	6.0
8	4.0	26	7	159.	8.2
8	4.0	26	8	161.	6.1
8	4.0	26	9	164.	6.8
8	4.0	26	10	165.	5.8

CROP	STAGE	STATE	CRD	MEAN	STD DEV
8	6.0	26		188.	6.1
8	6.0	26	1	194.	3.4
8	6.0	26	2	190.	5.2
8	6.0	26	3	190.	5.5
8	6.0	26	4	186.	6.6
8	6.0	26	5	185.	5.0
8	6.0	26	6	189.	4.0
8	6.0	26	7	183.	6.4
8	6.0	26	8	187.	6.8
8	6.0	26	9	187.	6.8
8	6.0	26	10	188.	4.6

CROP	STAGE	STATE	CRD	MEAN	STD DEV
8	7.0	26		215.	10.5
8	7.0	26	1	218.	8.1
8	7.0	26	2	217.	7.9
8	7.0	26	3	220.	5.0
8	7.0	26	4	215.	8.0
8	7.0	26	5	210.	8.3
8	7.0	26	6	210.	8.3
8	7.0	26	7	215.	15.7
8	7.0	26	8	215.	15.7
8	7.0	26	9	215.	15.7
8	7.0	26	10	215.	9.3

CROP	STAGE	STATE	CRD	MEAN	STD DEV
12	1.0	26		174.	8.4
12	1.0	26	1	186.	7.3
12	1.0	26	2	183.	4.4
12	1.0	26	3	185.	6.5
12	1.0	26	4	178.	6.3
12	1.0	26	5	176.	8.9
12	1.0	26	6	173.	7.3
12	1.0	26	7	173.	7.3
12	1.0	26	8	172.	7.6
12	1.0	26	9	172.	7.6
12	1.0	26	10	178.	6.6

Michigan

ORIGINAL PAGE IS
OF POOR QUALITY

CROP	STAGE	STATE	CRD	MEAN	STD DEV
12	2.0	26	1	219.	9.7
12	2.0	26	2	229.	12.0
12	2.0	26	3	225.	9.1
12	2.0	26	4	227.	9.9
12	2.0	26	5	220.	6.5
12	2.0	26	6	217.	9.8
12	2.0	26	7	214.	6.6
12	2.0	26	8	214.	6.6
12	2.0	26	9	213.	6.5
12	2.0	26	10	214.	4.7
12	2.0	26		219.	7.5

Michigan

ORIGINAL PAGE IS
OF POOR QUALITY

CROP	STAGE	STATE	CRD	MEAN	STD DEV
1	1.0	28	1	111.	12.3
1	2.0	28	2	103.	7.8
1	3.0	28	3	117.	9.7
1	4.0	28	4	123.	10.3
1	5.0	28	5	108.	11.2
1	6.0	28	6	120.	15.8
1	7.0	28	7	115.	11.3
1	8.0	28	8	110.	10.6
1	9.0	28	9	104.	7.2
1	10.0	28	10	99.	5.8
1	1.0	28	10	111.	8.3

CROP	STAGE	STATE	CRD	MEAN	STD DEV
1	4.0	28	1	217.	8.9
1	4.0	28	2	215.	10.4
1	4.0	28	3	219.	4.6
1	4.0	28	4	224.	11.9
1	4.0	28	5	215.	8.6
1	4.0	28	6	223.	13.1
1	4.0	28	7	217.	5.3
1	4.0	28	8	210.	5.8
1	4.0	28	9	215.	4.9
1	4.0	28	10	212.	6.8
1	4.0	28	10	217.	6.6

CROP	STAGE	STATE	CRD	MEAN	STD DEV
1	5.0	28	1	237.	10.1
1	5.0	28	2	235.	10.1
1	5.0	28	3	246.	8.6
1	5.0	28	4	245.	10.4
1	5.0	28	5	232.	9.3
1	5.0	28	6	245.	10.3
1	5.0	28	7	239.	7.8
1	5.0	28	8	231.	8.1
1	5.0	28	9	234.	5.8
1	5.0	28	10	228.	6.5
1	5.0	28	10	237.	7.0

CROP	STAGE	STATE	CRD	MEAN	STD DEV
1	6.0	28	1	274.	12.9
1	6.0	28	2	274. ¹⁷¹	10.4
1	6.0	28	3	274. ¹⁵⁷	10.1
1	6.0	28	4	286. ¹⁵³	14.1
1	6.0	28	5	258. ¹⁵⁵	14.3
1	6.0	28	6	278. ¹⁵²	13.9
1	6.0	28	7	276. ¹⁵¹	11.1
1	6.0	28	8	266. ¹⁵⁶	8.9
1	6.0	28	9	279. ¹⁷⁵	10.4
1	6.0	28	10	276. ¹⁷⁷	9.6
1	6.0	28	10	274.	9.7

Mississippi

ORIGINAL PAGE IS
OF POOR QUALITY

CROP	STAGE	STATE	CRD	MEAN	STD DEV
N	0.0	28	1	153.	10.4
N	0.0	28	2	155.	9.0
N	0.0	28	3	156.	4.2
N	0.0	28	4	158.	6.1
N	0.0	28	5	153.	9.2
N	0.0	28	6	155.	9.0
N	0.0	28	7	147.	5.5
N	0.0	28	8	152.	4.6
N	0.0	28	9	152.	4.0
N	0.0	28	10	150.	5.0
N	0.0	28	10	153.	9.5

CROP	STAGE	STATE	CRD	MEAN	STD DEV
N	3.0	28	1	210.	7.8
N	0.0	28	2	210.	13.4
N	0.0	28	3	212.	9.8
N	0.0	28	4	216.	7.9
N	0.0	28	5	214.	8.2
N	0.0	28	6	208.	5.8
N	0.0	28	7	204.	4.5
N	0.0	28	8	204.	3.9
N	0.0	28	9	210.	7.5
N	0.0	28	10	207.	2.2
N	0.0	28	10	210.	6.2

CROP	STAGE	STATE	CRD	MEAN	STD DEV
N	4.0	28	1	226.	5.8
N	0.0	28	2	229.	7.5
N	0.0	28	3	227.	7.3
N	0.0	28	4	232.	3.7
N	0.0	28	5	231.	5.4
N	0.0	28	6	224.	4.9
N	0.0	28	7	222.	3.6
N	0.0	28	8	225.	5.0
N	0.0	28	9	223.	2.3
N	0.0	28	10	222.	2.2
N	0.0	28	10	226.	2.2

CROP	STAGE	STATE	CRD	MEAN	STD DEV
N	5.0	28	1	270.	9.3
N	0.0	28	2	274.	12.8
N	0.0	28	3	274.	12.9
N	0.0	28	4	272.	12.8
N	0.0	28	5	271.	12.9
N	0.0	28	6	269.	12.8
N	0.0	28	7	266.	12.1
N	0.0	28	8	269.	12.1
N	0.0	28	9	267.	12.9
N	0.0	28	10	265.	12.7
N	0.0	28	10	270.	12.4

Mississippi

ORIGINAL PAGE IS
OF POOR QUALITY

CROP	STAGE	STATE	CRD	MEAN	STD DEV
2	6.0	28	1	304.	7.4
2	6.0	28	2	310.	11.7
2	6.0	28	3	307.	6.9
2	6.0	28	4	310.	5.9
2	6.0	28	5	301.	5.9
2	6.0	28	6	303.	5.3
2	6.0	28	7	303.	5.5
2	6.0	28	8	301.	4.6
2	6.0	28	9	302.	9.3
2	6.0	28	10	302.	6.6
2	6.0	28	10	304.	5.1

CROP	STAGE	STATE	CRD	MEAN	STD DEV
4	1.0	28	1	146.	10.4
4	1.0	28	2	143.	7.8
4	1.0	28	3	149.	13.7
4	1.0	28	4	149.	10.1
4	1.0	28	5	141.	6.7
4	1.0	28	6	142.	2.8
4	1.0	28	7	154.	23.9
4	1.0	28	8	145.	5.5
4	1.0	28	9	147.	5.9
4	1.0	28	10	143.	4.6
4	1.0	28	10	146.	5.3

CROP	STAGE	STATE	CRD	MEAN	STD DEV
4	5.0	28	1	240.	9.8
4	5.0	28	2	239.	8.1
4	5.0	28	3	235.	6.9
4	5.0	28	4	240.	12.2
4	5.0	28	5	243.	10.1
4	5.0	28	6	239.	10.3
4	5.0	28	7	240.	12.9
4	5.0	28	8	244.	11.8
4	5.0	28	9	240.	11.5
4	5.0	28	10	240.	10.1
4	5.0	28	10	240.	8.6

CROP	STAGE	STATE	CRD	MEAN	STD DEV
4	6.0	28	1	265.	10.9
4	6.0	28	2	261.	10.3
4	6.0	28	3	267.	9.6
4	6.0	28	4	265.	14.2
4	6.0	28	5	265.	8.5
4	6.0	28	6	265.	5.6
4	6.0	28	7	268.	9.2
4	6.0	28	8	266.	13.8
4	6.0	28	9	258.	12.9
4	6.0	28	10	265.	5.5

Mississippi

ORIGINAL PAGE IS
OF POOR QUALITY

CROP	STAGE	STATE	CRD	MEAN	STD DEV
100	2.0	2A	1	177.	8.7
100	2.0	2A	2	177.	8.4
100	2.0	2A	3	179.	7.2
100	2.0	2A	4	183.	7.9
100	2.0	2A	5	178.	10.5
100	2.0	2A	6	178.	10.4
100	2.0	2A	7	177.	5.1
100	2.0	2A	8	175.	10.1
100	2.0	2A	9	173.	9.1
100	2.0	2A	10	174.	11.5
100	2.0	2A	10	177.	8.0

CROP	STAGE	STATE	CRD	MEAN	STD DEV
100	4.0	2A	1	205.	9.9
100	4.0	2A	2	205.	11.5
100	4.0	2A	3	206.	11.5
100	4.0	2A	4	212.	9.2
100	4.0	2A	5	198.	14.0
100	4.0	2A	6	207.	8.8
100	4.0	2A	7	210.	7.5
100	4.0	2A	8	201.	6.2
100	4.0	2A	9	204.	8.6
100	4.0	2A	10	202.	12.2
100	4.0	2A	10	205.	8.8

CROP	STAGE	STATE	CRD	MEAN	STD DEV
100	5.0	2A	1	257.	12.8
100	5.0	2A	2	256.	14.3
100	5.0	2A	3	263.	19.4
100	5.0	2A	4	261.	14.3
100	5.0	2A	5	255.	12.5
100	5.0	2A	6	257.	12.7
100	5.0	2A	7	260.	13.7
100	5.0	2A	8	255.	13.0
100	5.0	2A	9	254.	12.6
100	5.0	2A	10	251.	12.5
100	5.0	2A	10	257.	12.2

Mississippi

ORIGINAL PAGE IS
OF POOR QUALITY

CROP	STAGE	STATE	CRD	MEAN	STD DEV
9	1.0	28		118.	11.1
9	1.0	28	1	117.	9.1
9	1.0	28	4	120.	13.8
9	1.0	28	10	118.	11.4

CROP	STAGE	STATE	CRD	MEAN	STD DEV
9	2.0	28		132.	9.3
9	2.0	28	1	133.	7.5
9	2.0	28	4	131.	11.7
9	2.0	28	10	132.	9.1

CROP	STAGE	STATE	CRD	MEAN	STD DEV
9	4.0	28		225.	8.1
9	4.0	28	1	229.	6.3
9	4.0	28	4	221.	8.4
9	4.0	28	10	225.	6.8

CROP	STAGE	STATE	CRD	MEAN	STD DEV
9	7.0	28		273.	7.5
9	7.0	28	1	273.	8.1
9	7.0	28	4	273.	7.9
9	7.0	28	10	273.	7.0

CROP	STAGE	STATE	CRD	MEAN	STD DEV
10	1.0	28		126.	9.0
10	1.0	28	1	124.	8.5
10	1.0	28	2	128.	7.8
10	1.0	28	3	132.	8.3
10	1.0	28	4	124.	8.1
10	1.0	28	5	127.	8.9
10	1.0	28	6	124.	10.7
10	1.0	28	7	129.	9.1
10	1.0	28	8	127.	9.2
10	1.0	28	9	121.	12.7
10	1.0	28	10	126.	8.4

Mississippi

ORIGINAL PAGE IS
OF POOR QUALITY

CROP	STAGE	STATE	CRD	MEAN	STD DEV
1	1.0	39	1	138.	8.3
1	1.0	39	2	135.	5.6
1	1.0	39	3	139.	9.2
1	1.0	39	4	142.	8.3
1	1.0	39	5	137.	9.4
1	1.0	39	6	135.	9.2
1	1.0	39	7	138.	9.1
1	1.0	39	8	139.	9.7
1	1.0	39	9	139.	10.4
1	1.0	39	10	138.	9.8

CROP	STAGE	STATE	CRD	MEAN	STD DEV
1	3.0	39	1	206.	3.8
1	3.0	39	2	205.	2.9
1	3.0	39	3	206.	2.6
1	3.0	39	4	211.	2.9
1	3.0	39	5	205.	3.8
1	3.0	39	6	206.	4.3
1	3.0	39	7	207.	4.4
1	3.0	39	8	204.	3.8
1	3.0	39	9	208.	5.0
1	3.0	39	10	208.	3.0

CROP	STAGE	STATE	CRD	MEAN	STD DEV
1	3.5	39	1	228.	5.1
1	3.5	39	2	227.	4.7
1	3.5	39	3	229.	9.1
1	3.5	39	4	234.	5.7
1	3.5	39	5	226.	3.4
1	3.5	39	6	229.	3.6
1	3.5	39	7	228.	5.5
1	3.5	39	8	224.	4.3
1	3.5	39	9	225.	5.0
1	3.5	39	10	229.	4.6

CROP	STAGE	STATE	CRD	MEAN	STD DEV
1	4.0	39	1	243.	7.1
1	4.0	39	2	241.	6.2
1	4.0	39	3	242.	7.6
1	4.0	39	4	250.	4.4
1	4.0	39	5	241.	8.3
1	4.0	39	6	245.	4.9
1	4.0	39	7	246.	5.0
1	4.0	39	8	240.	9.2
1	4.0	39	9	244.	9.6
1	4.0	39	10	242.	7.6

Ohio

ORIGINAL PAGE IS
OF POOR QUALITY

CROP	STAGE	STATE	CRD	MEAN	STD DEV
1	5.0	39		263.	6.3
1	5.0	39	1	260.	2.2
1	5.0	39	2	265.	4.7
1	5.0	39	3	268.	1.4
1	5.0	39	4	261.	3.7
1	5.0	39	5	264.	6.3
1	5.0	39	6	267.	9.1
1	5.0	39	7	255.	8.2
1	5.0	39	8	264.	6.4
1	5.0	39	9	264.	4.7
1	5.0	39	10	263.	2.8

CROP	STAGE	STATE	CRD	MEAN	STD DEV
1	6.0	39		307.	4.6
1	6.0	39	1	301.	7.5
1	6.0	39	2	309.	4.5
1	6.0	39	3	310.	4.3
1	6.0	39	4	305.	1.9
1	6.0	39	5	309.	3.0
1	6.0	39	6	306.	2.6
1	6.0	39	7	305.	1.3
1	6.0	39	8	309.	4.5
1	6.0	39	9	308.	5.4
1	6.0	39	10	307.	2.2

CROP	STAGE	STATE	CRD	MEAN	STD DEV
2	1.0	39		148.	6.8
2	1.0	39	1	147.	7.5
2	1.0	39	2	149.	7.7
2	1.0	39	3	151.	5.9
2	1.0	39	4	145.	7.8
2	1.0	39	5	144.	7.2
2	1.0	39	6	150.	7.8
2	1.0	39	7	146.	7.7
2	1.0	39	8	150.	6.5
2	1.0	39	9	152.	5.9
2	1.0	39	10	148.	7.0

CROP	STAGE	STATE	CRD	MEAN	STD DEV
2	3.0	39		211.	5.2
2	3.0	39	1	211.	5.4
2	3.0	39	2	214.	5.6
2	3.0	39	3	213.	6.1
2	3.0	39	4	210.	5.9
2	3.0	39	5	210.	5.5
2	3.0	39	6	209.	4.5
2	3.0	39	7	211.	6.7
2	3.0	39	8	211.	5.2
2	3.0	39	9	211.	5.1
2	3.0	39	10	211.	5.4

Ohio

ORIGINAL PAGE IS
OF POOR QUALITY

CROP	STAGE	STATE	CRD	MEAN	STD DEV
N	4.0	39		235.	4.2
N	4.0	39	1	234.	2.6
N	4.0	39	2	236.	3.6
N	4.0	39	3	237.	1.3
N	4.0	39	4	235.	2.9
N	4.0	39	5	236.	4.8
N	4.0	39	6	235.	3.2
N	4.0	39	7	230.	5.1
N	4.0	39	8	234.	7.0
N	4.0	39	9	234.	3.4
N	4.0	39	10	235.	2.7

CROP	STAGE	STATE	CRD	MEAN	STD DEV
N	5.0	39		263.	6.8
N	5.0	39	1	254.	3.4
N	5.0	39	2	267.	5.7
N	5.0	39	3	269.	9.3
N	5.0	39	4	259.	4.3
N	5.0	39	5	266.	6.7
N	5.0	39	6	267.	8.8
N	5.0	39	7	259.	4.4
N	5.0	39	8	260.	5.4
N	5.0	39	9	264.	6.6
N	5.0	39	10	263.	3.9

CROP	STAGE	STATE	CRD	MEAN	STD DEV
N	6.0	39		295.	4.0
N	6.0	39	1	291.	2.4
N	6.0	39	2	295.	2.9
N	6.0	39	3	299.	3.3
N	6.0	39	4	293.	3.5
N	6.0	39	5	294.	3.8
N	6.0	39	6	298.	4.0
N	6.0	39	7	294.	4.4
N	6.0	39	8	296.	3.9
N	6.0	39	9	295.	3.4
N	6.0	39	10	295.	2.4

CROP	STAGE	STATE	CRD	MEAN	STD DEV
H	1.0	39		289.	5.6
H	1.0	39	1	287.	4.4
H	1.0	39	2	285.	1.4
H	1.0	39	3	286.	5.4
H	1.0	39	4	285.	3.5
H	1.0	39	5	290.	2.2
H	1.0	39	6	284.	7.1
H	1.0	39	7	240.	2.4
H	1.0	39	8	296.	3.9
H	1.0	39	9	296.	3.2
H	1.0	39	10	289.	1.5

Ohio

ORIGINAL PAGE IS
OF POOR QUALITY

CROP	STAGE	STATE	CRD	MEAN	STD DEV
B	2.0	39	1	301.	4.0
B	2.0	39	2	300.	1.7
B	2.0	39	3	300.	4.6
B	2.0	39	4	300.	5.1
B	2.0	39	5	299.	2.9
B	2.0	39	6	302.	2.6
B	2.0	39	7	300.	2.6
B	2.0	39	8	301.	2.4
B	2.0	39	9	304.	5.4
B	2.0	39	10	305.	3.9
B	2.0	39		301.	1.2

CROP	STAGE	STATE	CRD	MEAN	STD DEV
B	4.0	39	1	150.	5.4
B	4.0	39	2	151.	5.9
B	4.0	39	3	153.	5.7
B	4.0	39	4	156.	7.1
B	4.0	39	5	147.	5.5
B	4.0	39	6	150.	5.3
B	4.0	39	7	150.	9.0
B	4.0	39	8	147.	6.6
B	4.0	39	9	145.	8.3
B	4.0	39	10	150.	2.9
B	4.0	39		150.	6.0

CROP	STAGE	STATE	CRD	MEAN	STD DEV
B	6.0	39	1	173.	5.1
B	6.0	39	2	173.	5.5
B	6.0	39	3	175.	2.8
B	6.0	39	4	177.	3.1
B	6.0	39	5	171.	6.5
B	6.0	39	6	172.	6.2
B	6.0	39	7	175.	3.0
B	6.0	39	8	172.	6.6
B	6.0	39	9	168.	3.7
B	6.0	39	10	175.	5.8
B	6.0	39		173.	4.5

CROP	STAGE	STATE	CRD	MEAN	STD DEV
B	7.0	39		198.	6.0
B	7.0	39	1	196.274	4.2
B	7.0	39	2	200.220	3.8
B	7.0	39	3	207.201	8.2
B	7.0	39	4	193.272	5.3
B	7.0	39	5	195.200	4.1
B	7.0	39	6	201.182	4.3
B	7.0	39	7	194.237	3.8
B	7.0	39	8	195.237	3.3
B	7.0	39	9	200.200	3.0
B	7.0	39	10	198.	3.4

Ohio

ORIGINAL PAGE IS
OF POOR QUALITY

CROP	STAGE	STATE	CRD	MEAN	STD DEV
11	1.0	39		162.	7.3
11	1.0	39	1	160.	6.2
11	1.0	39	2	167.	5.4
11	1.0	39	3	167.	9.1
11	1.0	39	4	159.	6.9
11	1.0	39	5	164.	6.2
11	1.0	39	6	169.	9.7
11	1.0	39	7	161.	5.7
11	1.0	39	8	167.	3.1
11	1.0	39	9	164.	3.2
11	1.0	39	10	162.	6.8

CROP	STAGE	STATE	CRD	MEAN	STD DEV
11	2.0	39		202.	6.6
11	2.0	39	1	197.	4.2
11	2.0	39	2	202.	5.0
11	2.0	39	3	211.	5.7
11	2.0	39	4	197.	4.1
11	2.0	39	5	199.	3.9
11	2.0	39	6	206.	3.7
11	2.0	39	7	194.	7.9
11	2.0	39	8	198.	5.6
11	2.0	39	9	207.	4.7
11	2.0	39	10	202.	3.7

CROP	STAGE	STATE	CRD	MEAN	STD DEV
12	1.0	39		168.	6.9
12	1.0	39	1	167.	9.0
12	1.0	39	2	170.	8.3
12	1.0	39	3	173.	6.9
12	1.0	39	4	166.	8.3
12	1.0	39	5	169.	4.6
12	1.0	39	6	169.	9.1
12	1.0	39	7	167.	5.4
12	1.0	39	8	165.	5.2
12	1.0	39	9	169.	7.8
12	1.0	39	10	168.	6.5

CROP	STAGE	STATE	CRD	MEAN	STD DEV
12	2.0	39		213.	6.3
12	2.0	39	1	211.	6.1
12	2.0	39	2	214.	5.3
12	2.0	39	3	220.	7.5
12	2.0	39	4	206.	4.8
12	2.0	39	5	212.	1.4
12	2.0	39	6	214.	3.9
12	2.0	39	7	204.	7.5
12	2.0	39	8	216.	5.4
12	2.0	39	9	215.	5.1
12	2.0	39	10	213.	2.6

Ohio

ORIGINAL PAGE IS
OF POOR QUALITY

CROP	STAGE	STATE	CRD	MEAN	STD DEV
1	1.0	55	1	139.	5.5
1	1.0	55	2	140.	4.7
1	1.0	55	3	141.	4.4
1	1.0	55	4	142.	3.8
1	1.0	55	5	136.	4.3
1	1.0	55	6	139.	4.8
1	1.0	55	7	140.	6.2
1	1.0	55	8	137.	7.2
1	1.0	55	9	138.	7.2
1	1.0	55	10	140.	7.3
1	1.0	55		139.	5.2

CROP	STAGE	STATE	CRD	MEAN	STD DEV
1	3.0	55	1	211.	7.0
1	3.0	55	2	212.	7.0
1	3.0	55	3	212.	7.3
1	3.0	55	4	215.	5.8
1	3.0	55	5	207.	8.0
1	3.0	55	6	210.	7.8
1	3.0	55	7	212.	7.2
1	3.0	55	8	207.	8.6
1	3.0	55	9	208.	6.7
1	3.0	55	10	210.	6.3
1	3.0	55		211.	7.0

CROP	STAGE	STATE	CRD	MEAN	STD DEV
1	3.5	55	1	236.	9.4
1	3.5	55	2	239.	8.9
1	3.5	55	3	240.	9.3
1	3.5	55	4	242.	7.2
1	3.5	55	5	231.	9.4
1	3.5	55	6	237.	10.5
1	3.5	55	7	239.	9.8
1	3.5	55	8	232.	10.6
1	3.5	55	9	232.	9.0
1	3.5	55	10	234.	9.6
1	3.5	55		236.	9.2

CROP	STAGE	STATE	CRD	MEAN	STD DEV
1	4.0	55	1	247.	8.7
1	4.0	55	2	249.	11.4
1	4.0	55	3	250.	9.3
1	4.0	55	4	251.	6.2
1	4.0	55	5	242.	10.0
1	4.0	55	6	246.	9.4
1	4.0	55	7	247.	7.9
1	4.0	55	8	244.	9.0
1	4.0	55	9	244.	8.0
1	4.0	55	10	246.	9.2
1	4.0	55		247.	8.8

Wisconsin

ORIGINAL PAGE IS
OF POOR QUALITY

CROP	STAGE	STATE	CRD	MEAN	STD DEV
1	5.0	55		254.	8.0
1	5.0	55	1	255.	8.2
1	5.0	55	2	254.	8.4
1	5.0	55	3	254.	6.6
1	5.0	55	4	250.	10.6
1	5.0	55	5	253.	7.7
1	5.0	55	6	255.	8.8
1	5.0	55	7	251.	8.7
1	5.0	55	8	251.	6.9
1	5.0	55	9	254.	7.4
1	5.0	55	10	254.	8.0

CROP	STAGE	STATE	CRD	MEAN	STD DEV
1	6.0	55		301.	7.1
1	6.0	55	1	301.72	5.7
1	6.0	55	2	302.51	4.0
1	6.0	55	3	303.16	10.5
1	6.0	55	4	299.63	5.4
1	6.0	55	5	298.57	8.0
1	6.0	55	6	299.57	7.6
1	6.0	55	7	301.73	5.3
1	6.0	55	8	302.13	5.5
1	6.0	55	9	306.17	6.5
1	6.0	55	10	301.	6.5

CROP	STAGE	STATE	CRD	MEAN	STD DEV
2	1.0	55		150.	5.5
2	1.0	55	1	150.	4.9
2	1.0	55	2	153.	4.5
2	1.0	55	3	153.	3.7
2	1.0	55	4	151.	3.4
2	1.0	55	5	151.	4.0
2	1.0	55	6	149.	5.5
2	1.0	55	7	148.	6.1
2	1.0	55	8	151.	8.7
2	1.0	55	9	144.	7.2
2	1.0	55	10	150.	5.1

CROP	STAGE	STATE	CRD	MEAN	STD DEV
2	5.0	55		269.	5.2
2	5.0	55	1	270.	6.1
2	5.0	55	2	273.	5.3
2	5.0	55	3	273.	5.4
2	5.0	55	4	266.	4.4
2	5.0	55	5	267.	5.6
2	5.0	55	6	264.	4.5
2	5.0	55	7	266.	5.0
2	5.0	55	8	269.	3.4
2	5.0	55	9	268.	3.7
2	5.0	55	10	269.	4.7

Wisconsin

ORIGINAL PAGE IS
OF POOR QUALITY

CROP	STAGE	STATE	CRD	MEAN	STD DEV
2	6.0	55		299.	5.8
2	6.0	55	1	298.	4.9
2	6.0	55	2	302.	6.9
2	6.0	55	3	303.	5.9
2	6.0	55	4	298.	5.4
2	6.0	55	5	298.	5.0
2	6.0	55	6	297.	6.3
2	6.0	55	7	299.	5.8
2	6.0	55	8	297.	4.8
2	6.0	55	9	295.	7.5
2	6.0	55	10	299.	5.2

CROP	STAGE	STATE	CRD	MEAN	STD DEV
5	1.0	55		122.	9.0
5	1.0	55	1	124.	6.0
5	1.0	55	2	128.	5.4
5	1.0	55	3	127.	6.6
5	1.0	55	4	120.	7.6
5	1.0	55	5	124.	6.8
5	1.0	55	6	125.	8.2
5	1.0	55	7	117.	10.3
5	1.0	55	8	116.	10.4
5	1.0	55	9	115.	12.8
5	1.0	55	10	122.	7.1

CROP	STAGE	STATE	CRD	MEAN	STD DEV
5	4.0	55		180.	7.7
5	4.0	55	1	183.	6.2
5	4.0	55	2	185.	6.5
5	4.0	55	3	184.	4.8
5	4.0	55	4	176.	7.9
5	4.0	55	5	180.	7.6
5	4.0	55	6	183.	7.2
5	4.0	55	7	176.	9.4
5	4.0	55	8	176.	8.5
5	4.0	55	9	176.	8.3
5	4.0	55	10	180.	7.3

CROP	STAGE	STATE	CRD	MEAN	STD DEV
5	7.0	55		223.	7.0
5	7.0	55	1	225.	6.7
5	7.0	55	2	230.	4.6
5	7.0	55	3	232.	6.1
5	7.0	55	4	219.	4.7
5	7.0	55	5	223.	5.4
5	7.0	55	6	226.	4.8
5	7.0	55	7	218.	5.6
5	7.0	55	8	219.	5.5
5	7.0	55	9	219.	6.3
5	7.0	55	10	223.	5.2

Wisconsin

ORIGINAL PAGE IS
OF POOR QUALITY

CROP	STAGE	STATE	CRD	MEAN	STD DEV
11	1.0	55		174.	7.8
11	1.0	55	1	178.	7.6
11	1.0	55	2	177.	5.5
11	1.0	55	3	179.	5.7
11	1.0	55	4	172.	8.3
11	1.0	55	5	175.	6.5
11	1.0	55	6	174.	5.4
11	1.0	55	7	171.	9.7
11	1.0	55	8	171.	10.5
11	1.0	55	9	172.	9.5
11	1.0	55	10	174.	7.6

CROP	STAGE	STATE	CRD	MEAN	STD DEV
11	2.0	55		218.	9.9
11	2.0	55	1	224.	8.4
11	2.0	55	2	225.	9.2
11	2.0	55	3	227.	10.4
11	2.0	55	4	214.	9.0
11	2.0	55	5	219.	9.9
11	2.0	55	6	215.	7.3
11	2.0	55	7	215.	7.9
11	2.0	55	8	211.	7.9
11	2.0	55	9	213.	9.9
11	2.0	55	10	218.	8.6

Wisconsin

NASA-JSC